

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 10,0 S
 Edition : 14.02.92
 Replaces : 04.91
 Test oil : ISO-4113
 Combination no. : 0 403 446 250
 Injection pump
 Pump designation : PES6MW100/32ORS1194
 EP type number : 0 413 406 186
 Governor
 Governor design. : RQV300...1300MW108K
 Governor no. : 0 420 083 998

Customer-spec. information
 Customer : PERKINS

Engine : 180 TI

1st version kW : 134.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008

Outside diameter
 x wall thickness
 x length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

AO1

Prestroke mm : 3.30...3.40
 : (3.25...3.45)
 Rack travel in mm : 12.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300
 Rack travel in mm : 14.30...14.40
 Del.quantity cm³/ : 13.4...13.6
 100 s: (13.2...13.8)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.1...6.3
 Del.quantity cm³/ : 1.4...1.8
 100 s: (1.1...2.0)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 10.00...10.40
 2nd speed rpm : 900
 travel mm : 6.40...6.60
 3rd speed rpm : 480
 travel mm : 3.10...3.70
 4th speed rpm : 300
 travel mm : 1.40...1.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1380
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 900
 Del.quantity : 134.0...136.0
 1000 : (132.0...138.0)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.30
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1480...1510
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 14.30...14.40
2nd speed rpm : 800
Rack travel in m: 13.10...13.30
3rd speed rpm : 500
Rack travel in m: 11.70...11.90
4th speed rpm : 1000
Rack travel in m: 13.60...13.90
5th speed rpm : 700
Rack travel in m: 12.60...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.00

Measurement
Speed 1/min : 500

1st pressure hPa : 180

A02

Rack travel in m: 10.40...10.50
2nd pressure hPa : 220
Rack travel in m: 10.90...11.20
3rd pressure hPa : 900
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 240 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 126.0...129.0
1000 s: (123.5...131.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...100.0
1000 s: (87.0...103.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°
before start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA8,1D1
 Edition : 31.01.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 403 446 284

Injection pump
 Pump designation : PES6MW100/72ORS1197
 EP type number : 0 413 406 185
 Governor
 Governor design. : RQV325...1250MW109-1
 K
 Governor no. : 0 420 083 995

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8060.45.6090

1st version kW : 167.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

A03

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.50...14.60

Del.quantity cm³/ : 10.5...10.7
 100 s: (10.3...10.9)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 7.4...7.6
 Del.quantity cm³/ : 2.0...2.4
 100 s: (1.7...2.6)

Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
 travel mm : 10.00...10.40
 2nd speed rpm : 825
 travel mm : 4.90...5.10
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 325
 travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 1200
 Del.quantity : 105.0...107.0
 1000 : (103.0...109.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.50
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 325
Rack travel in mm : 7.40...7.60

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.50...14.60
2nd speed rpm : 1100
Rack travel in m: 14.20...14.40
3rd speed rpm : 900
Rack travel in m: 13.70...13.90
4th speed rpm : 700
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.70...11.80
2nd pressure hPa : 700
Rack travel in m: 12.80...13.10
3rd pressure hPa : 1000
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

A04

Speed rpm : 1100
Del.quantity cm3/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...60.0
1000 s: (37.0...63.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.40...7.60
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 5
 Edition : 30.04.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 403 446 300

Injection pump
 Pump designation : PES6MM100/32ORS1171
 EP type number : 0 413 406 156
 Governor
 Governor design. : RQV300...1300MW80-7
 Governor no. : 0 420 083 267

Customer-spec. information
 Customer : RVI

Engine : MIDS 060212B

1st version kW : 117.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del. quantity cm³/ : 8.8...9.0
 100 s: (8.6...9.2)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.60...6.00
 Del. quantity cm³/ : 1.6...2.0
 100 s: (1.3...2.2)

Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1480
 travel mm : 9.60...10.00

2nd speed rpm : 1350
 travel mm : 8.70...8.90

3rd speed rpm : 500
 travel mm : 3.30...3.90

4th speed rpm : 300
 travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 700
 Del. quantity : 88.0...90.0
 1000 : (86.0...92.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 125...133

Testing:

1st rack travel in: 9.80
Speed rpm : 1395...1405
2nd rack travel in: 4.00
Speed rpm : 1485...1515
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.60...6.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.80...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.20
2nd pressure hPa : 180
Rack travel in m: 10.35...10.45
3rd pressure hPa : 120
Rack travel in m: 9.70...9.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1395...1405

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...6.00
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 466 117JD
 Injection pump
 Pump designation : PES6MW100/120RS1178
 EP type number : 0 413 406 160
 Governor
 Governor design. : RSV350...1250MW2A332
 -3
 Governor no. : 0 420 085 152

Cust. part no. : 3913734

Customer-spec. information
 Customer : CDC

Engine : 6 CTA

1st version kW : 186.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55
 : (3.40...3.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del. quantity cm³/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del. quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 13.10
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1255...1285
3rd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 29...37
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.20...6.40

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.00...14.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 215
Rack travel in m: 11.60...11.80
3rd pressure hPa : 390
Rack travel in m: 13.00...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 92.5...96.5
1000 s: (90.5...98.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.70...6.90
Del.quantity cm³/ : 23.5...27.5
1000 s: (21.5...29.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.02.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 474 023
Injection pump
Pump designation : PES4MW100/720RS1212
EP type number : 0 413 404 114
Governor
Governor design. : RSV350...1300MWOA329-13
Governor no. : 0 420 085 191

Customer-spec. information
Customer : MB-NFZ

Engine : OM 364 LA

1st version kw : 100.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1385...1415
4th rack travel in: 14.50
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 82...90
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.50...6.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 12.30...12.50
3rd pressure hPa : 700
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

A10

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...95.0
1000 s: (82.0...98.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.50...6.80
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 20.03.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 476 117

Injection pump
 Pump designation : PES6MM100/72ORS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV750...1200MWA329-15
 Governor no. : 0 420 085 193

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter x wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 10.6...10.8
 100 s: (10.4...11.0)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 750.0
 Rack travel in mm : 5.8...6.3
 Del.quantity cm³/ : 1.0...1.4
 100 s: (0.7...1.6)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1180
 Aneroid pressure h: 1000
 Del.quantity : 106.0...108.0
 1000 : (104.0...110.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 82...90

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 12.20

Speed rpm : 1230...1235 *
2nd rack travel in: 4.00
Speed rpm : 1310...1318
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.30...11.40
2nd pressure hPa : 500
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20

A12

Speed rpm : 1230...1235

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 5.80...6.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 800...1200 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 118
Injection pump
Pump designation : PES6MW100/72ORS1217-
1
EP type number : 0 413 406 214
Governor
Governor design. : RSV325...1200MWA349
Governor no. : 0 420 085 194

Customer-spec. information
Customer : MWM

Engine : TD 226 B 6

1st version kW : 118.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 9.20...9.30

Del. quantity cm³/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.5...6.7

Del. quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 750

Del. quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.20
Speed rpm : 1220...1230
2nd rack travel in: 4.00
Speed rpm : 1240...1270
3rd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 9.20...9.30
2nd speed rpm : 750
Rack travel in m: 10.00...10.10
3rd speed rpm : 1025
Rack travel in m: 9.50...9.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.50...8.60

Measurement

Speed 1/min : 500

1st pressure hPa : 270
Rack travel in m: 9.10...9.20
2nd pressure hPa : 350
Rack travel in m: 9.50...9.80
3rd pressure hPa : 750
Rack travel in m: 10.00...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 750
Del.quantity cm³/ : 104.5...107.5
1000 s: (102.0...110.0)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 62.5...64.5
1000 s: (60.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (97.0...123.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70
Del.quantity cm³/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 119
Injection pump
Pump designation : PES6MM100/72ORS1217-1
EP type number : 0 413 406 214
Governor
Governor design. : RSV325...1200MWA349-1
Governor no. : 0 420 085 195

Customer-spec. information
Customer : MWM

Engine : TD 226 B 6

1st version kW : 136.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175
Rack travel in mm : 10.10...10.20
Del.quantity cm3/ : 11.3...11.5
100 s: (11.1...11.7)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 325.0
Rack travel in mm : 6.5...6.7
Del.quantity cm3/ : 0.8...1.2
100 s: (0.5...1.4)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 750
Del.quantity : 113.0...115.0
1000 : (111.0...117.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.10
Speed rpm : 1220...1230
2nd rack travel in: 4.00
Speed rpm : 1250...1280
3rd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.10...10.20
2nd speed rpm : 750
Rack travel in m: 10.80...10.90
3rd speed rpm : 1025
Rack travel in m: 10.30...10.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.50...8.60

Measurement

Speed 1/min : 500

1st pressure hPa : 270
Rack travel in m: 9.10...9.20
2nd pressure hPa : 450
Rack travel in m: 9.90...10.20
3rd pressure hPa : 750
Rack travel in m: 10.80...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 750

Del.quantity cm3/ : 121.5...124.5
1000 s: (119.0...127.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.5...64.5
1000 s: (60.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (97.0...123.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 9 400 087 431

 Injection pump
 Pump designation : PES6P120A72ORS3256-2
 EP type number : 9 400 087 ...
 Governor
 Governor design. : RGV300...1300PA953-2
 Governor no. : 9 420 080 285

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366 LA

1st version kW : 141.7
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.80...1.30

2nd speed rpm : 660
travel mm : 3.80...4.30

3rd speed rpm : 960
travel mm : 5.20...5.70

4th speed rpm : 1357
travel mm : 8.00...8.50

5th speed rpm : 1492
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1385

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm3 : 2.00
1000 : (3.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 1385
Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.4

Testing:

Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 0.50...0.70
2nd pressure hPa : 1200
Rack travel in m: 1.10...1.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 115.0...119.0
1000 s: (112.0...122.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 56.0...58.0
1000 s: (53.0...61.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 i 5
 Edition : 30.04.92
 Replaces : 09.91
 Test oil : ISO-4113

 Combination no. : 9 400 087 450

 Injection pump
 Pump designation : PES6P120A720RS3256-2
 EP type number : 9 400 087 ...
 Governor
 Governor design. : RGV300...1300PA978
 Governor no. : 9 420 080 296

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366 LA

1st version kW : 126.8
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 660

travel mm : 3.80...4.30

3rd speed rpm : 960

travel mm : 5.20...5.70

4th speed rpm : 1357

travel mm : 8.00...8.50

5th speed rpm : 1492

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1385

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 1385
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500

Measurement
Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 0.30...0.50
2nd pressure hPa : 1200
Rack travel in m: 0.70...0.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

A20

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 115.0...119.0
1000 s: (112.0...122.0)
Spread cm³ : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm³/ : 63.0...65.0
1000 s: (60.0...68.0)
Spread cm³ : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.50
Del.quantity cm³/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery blocking at 4.05 mm
after cyl. 1 start-of-delivery

BOSCH-~~INJ.~~-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 07.05.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1200R381-2
Type number : 0 460 426 154
Customer Part-No. : 391 6974

Customer-specific information
Customer : CDC

Engine : 6 BT - 5.9

Power KW: 92.5
Speed 1/min: 2400

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.5
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.50...4.10
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000S.: 62.50...63.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 340
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1265
Del. quantity cm³/
1000S.: 42.50...48.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 75.00...125.00
mind 1000S.: 75.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.60...6.40
mm: (5.30...6.70)
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 750
TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
TD travel mm: 1.50...2.30
mm: (1.20...2.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2.40...3.00
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Supply-pump pressure bar: 3.50...4.10
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump pressure bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(36.70...98.40)
2nd speed 1/min: 1200
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
3rd speed 1/min: 1280
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 15.00...55.00
(15.00...55.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1265
Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000s.: 42.50...48.50
(39.50...51.50)

9th speed 1/min: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 59.50...62.50
(58.00...64.00)

10th speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 60.50...63.50
(58.50...65.50)

12th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 62.50...63.50
(60.00...66.00)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 55.00...63.00
(53.00...65.00)

Mech. shutoff:
Mech. Abst. ellung:

1st speed 1/min: 1100
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 340
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 340
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 8.00...14.00
(6.00...16.00)

Dispersion cm³/1000s.: 5.5
(7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...4.00
(0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

2nd speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...80.00
1000S.: (30.00...80.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 75.00...125.00
1000S.: (75.00...125.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 1.2...1.6

SVS max. mm: 1.7

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 06.05.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE6/12F1100R371-2
Type number : 0 460 426 201
Customer Part-No. :

Customer-specific information
Customer : CUM

Engine : 6 T 590

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.5
mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
Setting value mm: 1.30...1.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 76.00...77.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm3/
1000S.: 45.00...51.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 80.00...120.00
mind 1000S.: 80.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.90...4.70
mm: (3.60...5.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700

TD travel mm: 1.30...1.70
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 500

TD travel mm: 0.00...0.70
mm: (0.00...1.00)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump pressure bar: 3.80...4.40

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 700

Supply-pump pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1100

Supply-pump pressure bar: 6.50...7.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 1100

Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1230

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1190

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 10.00...30.00
1000s.: (10.00...30.00)

Shutoff
electromagnet Volt: 12

5th speed 1/min: 1160

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 45.00...51.00
1000s.: (42.00...54.00)

9th speed 1/min: 1100

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 65.50...68.50
1000s.: (64.00...70.00)

12th speed 1/min: 700

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 76.00...77.00
1000s.: (73.50...79.50)

20th speed 1/min: 500

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 68.00...76.00
1000s.: (66.00...78.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450

Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 8.00...12.00
1000s.: (5.00...15.00)

Dispersion cm³: 5.5
1000s.: (7.0)

2nd speed 1/min: 550

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 180

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 80.00...140.00
1000s.: (80.00...140.00)

2nd speed 1/min: 350

Shutoff
electromagnet Volt: 12

Del. quantity cm³: 40.00...80.00
1000s.: (40.00...80.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 80.00...120.00
1000S.: (80.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.8...1.2
SVS max.	mm: 3.3

Remarks:

: C.D.C # 392 1960
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : BUK
Edition : 02.06.92
replaces : 04.84
Calibrating oil : ISO 4113

Injection pump : VE3/10F1800L70
Type number : 0 460 403 004

Customer-specific information
Customer : BUKH

Engine : DV-36 TME

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 800
Setting value mm: 2.90...3.30

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 800
Setting value bar: 5.10...5.70

A27

Full-load del. with charge press.:

Speed 1/min: 1700
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 43.50...44.50
Dispersion cm³/
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 34.50...36.50

Low-idle speed regulation

Speed 1/min: 450
Charge press hPa: -
Del. quantity cm³/
1000S.: 5.50...9.50

Full-load speed regulation

Speed 1/min: 1850
Charge press hPa: 800
Del. quantity cm³/
1000S.: 20.00...26.00

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm³/
mind 1000S.: 35.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
Charge press hPa: 800
TD travel mm: 1.10...1.90
mm: (0.80...2.20)
2nd speed 1/min: 1200
Charge press hPa: 800
TD travel mm: 2.90...3.30
mm: (2.40...3.80)
3rd speed 1/min: 1600
Charge press hPa: 800
TD travel mm: 5.00...5.80
mm: (4.70...6.10)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Charge press. hPa: 800

Supply-pump
 pressure bar: 0.80...1.40
 2nd speed 1/min: 1200
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 5.10...5.70
 3rd speed 1/min: 1800
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 8.00...8.60

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: -
 Overflow : 27.70...83.30
 quantity cm³/10s: (15.70...98.30)
 2nd speed 1/min: 1800
 Charge press. hPa: -
 Overflow : 55.50...138.80
 quantity cm³/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 265
 LDA-stroke mm: 4.00
 Del. quantity cm³/: 37.50...39.50
 1000S.: (35.50...41.50)
 2nd speed 1/min: 2000
 Charge press. hPa: 800
 Del. quantity cm³/: ...1.00
 1000S.: -
 3rd speed 1/min: 1900
 Charge press. hPa: 800
 Del. quantity cm³/: 2.00...8.00
 1000S.: (1.00...9.00)
 4th speed 1/min: 1850
 Charge press. hPa: 800
 Del. quantity cm³/: 20.00...26.00
 1000S.: (19.00...27.00)
 5th speed 1/min: 1700
 Charge press. hPa: 800
 Del. quantity cm³/: 43.50...44.50
 1000S.: (41.70...46.30)
 6th speed 1/min: 1200
 Charge press. hPa: 800
 Del. quantity cm³/: 44.50...46.50
 1000S.: (43.20...47.80)
 7th speed 1/min: 700
 Charge press. hPa: 800
 Del. quantity cm³/: 40.00...43.00
 1000S.: (39.20...43.80)
 8th speed 1/min: 700
 Charge press. hPa: -
 Del. quantity cm³/: 34.50...36.50
 1000S.: (33.20...37.80)

Mech. shutoff:
 Mech. Abst.:

1st speed 1/min: 1800
 Charge press. hPa: -
 1000S.: -

Idle delivery:

1st speed 1/min: 450
 Del. quantity cm³/: 5.50...9.50
 1000S.: (3.50...11.50)
 Dispersion cm³/: 3.0
 1000S.: -
 2nd speed 1/min: 480
 Del. quantity cm³/: 1.50...
 1000S.: -
 3rd speed 1/min: 530
 Del. quantity cm³/: 0.00...1.50
 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 450
 Charge press. hPa: -
 Del. quantity cm³/: 38.00...
 1000S.: -
 2nd speed 1/min: 580
 Charge press. hPa: -
 Del. quantity cm³/: ...36.00
 1000S.: -

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: 5.9...6.1
 MS mm: 0.7...0.9
 SVS max. mm: 4.2
 XK mm: 20.2...22.2
 XL mm: 12.5...15.8
 Ya mm: 37.2...39.2
 Yb mm: 52.2...58.6

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 02.06.92
replaces : 07.84
Calibrating oil : ISO4113

Injection pump : VE4/10F1900L106
Type number : 0 460 404 026

Customer-specific information
Customer : VM MOTORI

Engine : HR 492 HT9

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600
Charge press. hPa: 750
Setting value mm: 5.10...5.50

Supply-pump pressure

Speed 1/min: 1600
Charge press hPa: 750
Setting value bar: 5.50...6.10

Full-load del. with charge press.:

Speed 1/min: 1600
Charge press. hPa: 750
Del. quantity cm³/
1000S.: 47.00...48.00
Dispersion cm³/
1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 32.00...35.00

Low-idle speed regulation

Speed 1/min: 350
Charge press hPa: -
Del. quantity cm³/
1000S.: 16.00...20.00
Del. quantity cm³/
1000S.: -

Full-load speed regulation

Speed 1/min: 1900
Charge press hPa: 750
Del. quantity cm³/
1000S.: 43.50...46.50

Start:

Speed 1/min: 100
Charge press hPa: -
Del. quantity cm³/
mind 1000S.: 65.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.00...1.80
mm: (0.70...2.10)

2nd speed 1/min: 1600
Charge press hPa: 750
TD travel mm: 5.10...5.50
mm: (4.60...6.00)

3rd speed 1/min: 1900
Charge press hPa: 750
TD travel mm: 6.70...7.50
mm: (6.40...7.80)

Supply-pump pressure characteristic:

1st speed 1/min: 400

Charge press. hPa: 750
 Supply-pump
 pressure bar: 1.50...2.10
 2nd speed 1/min: 1600
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 5.50...6.10
 3rd speed 1/min: 1900
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 6.80...7.40

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow : 55.50...111.10
 quantity cm³/10s: (40.50...126.10)
 2nd speed 1/min: 1900
 Overflow : 55.50...111.10
 quantity cm³/10s: (40.50...126.10)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
 Charge-air pressure-setting
 point hPa: 300
 LDA-stroke mm: 4.2
 Del. quantity cm³/: 41.50...44.50
 1000S.: (40.00...46.00)
 2nd speed 1/min: 2100
 Charge press. hPa: 750
 Del. quantity cm³/: ...1.00
 1000S.: -
 3rd speed 1/min: 2050
 Charge press. hPa: 750
 Del. quantity cm³/: 2.00...
 1000S.: -
 4th speed 1/min: 2030
 Charge press. hPa: 750
 Del. quantity cm³/: 17.00...23.00
 1000S.: (16.00...24.00)
 5th speed 1/min: 1900
 Charge press. hPa: 750
 Del. quantity cm³/: 43.50...46.50
 1000S.: (41.00...49.00)
 6th speed 1/min: 1600
 Charge press. hPa: -
 Del. quantity cm³/: 31.00...34.00
 1000S.: (29.80...35.20)
 7th speed 1/min: 1600
 Charge press. hPa: 750
 Del. quantity cm³/: 47.00...48.00
 1000S.: (44.80...50.20)
 8th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/: 32.00...35.00
 1000S.: (30.50...36.50)

Mech. shutoff:

Mech. Abstimmung:

1st speed 1/min: 1900
 Idle delivery:
 1st speed 1/min: 350
 Del. quantity cm³/: 16.00...20.00
 1000S.: 14.00...22.00
 Dispersion cm³/: 2.5
 1000S.: -
 2nd speed 1/min: 430
 Del. quantity cm³/: 2.60...
 1000S.: -
 3rd speed 1/min: 500
 Del. quantity cm³/: ...1.00
 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
 Del. quantity cm³/: 48.00...
 1000S.: -

2nd speed 1/min: 450
 Del. quantity cm³/: ...47.50

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.4
 KF mm: 5.7...6.0
 MS mm: 1.4...1.6
 SVS max. mm: 3.6
 XK mm: 20.2...22.2
 XL mm: 14.2...17.6
 Ya mm: 37.2...39.2
 Yb mm: 55.7...63.5

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 15.06.92
replaces : 19.07.89
Calibrating oil : ISO-4113
Injection pump : VE4/10F2100L297-1
Type number : 0 460 404 056
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3YDT OM.;SEN.M-EGR

Power KW: 74

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.70...3.10

AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.20...4.80
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 62.50...63.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 40.50...41.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 290
Del. quantity cm3/
1000S.: 13.50...17.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 15.00...21.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...66.00
mind 1000S.: 50.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 22.00...24.00*

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
TD-travel
difference mm: 1.20...1.40*
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 8.00...8.80
mm: (7.70...9.10)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.70...3.10
mm: (2.20...3.60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5.20...5.80
mm: (4.80...6.20)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 1.50...3.50
mm: (1.30...3.70)

Shutoff
electromagnet Volt: 12
10th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3.50...5.90
mm: (2.90...6.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.70...4.30
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
4th speed 1/min: 300
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 500
LDA-stroke mm: 6.5
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.50...56.50
1000S.: (53.00...59.00)

2nd speed 1/min: 2700
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2500
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000S.: (14.00...22.00)

9th speed 1/min: 2100
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 51.30...53.70
1000S.: (50.20...54.80)

12th speed 1/min: 1200
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.50...63.50
1000S.: (60.00...66.00)

16th speed 1/min: 800
KSB solenoid-operated
valve volt: 12
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 40.50...43.50
1000H.: -

18th speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.50...41.50
1000S.: (38.70...43.30)

20th speed 1/min: 800
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.50...63.50
1000S.: -

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 290
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 290
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.50...17.50
1000S.: (11.50...19.50)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 380
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 320
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...13.00
1000S.: (6.50...13.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1000
Inj.-qty. cm³/: 22.00...24.00*
difference 1000S.: (20.00...26.00)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

5th speed 1/min: 1000
Inj.-qty. cm³/: 3.50...6.50#
difference 1000S.: (3.50...6.50)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):

1st speed 1/min: 1000
TD-travel : 1.20...1.40*
difference mm: (1.20...1.40)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

4th speed 1/min: 1000
TD-travel : 0.50...1.10#
difference mm: (0.50...1.10)

KSB/AFB
valve Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 250
KSB/AFB
valve Volt: 12
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 50.00...60.00
1000S.: (50.00...60.00)

2nd speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...50.00
1000S.: (40.00...50.00)

3rd speed 1/min: 100
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...66.00
1000S.: (50.00...66.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 0.8...1.2
Ya mm: 37.9...39.9
Yb mm: 38.2...43.8

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 04.06.92
Calibrating oil : ISO-4113

Injection pump : VE6/10F2150L152
Type number : 0 460 406 040

Customer-specific information
Customer : VW

Engine : 087T-LT 2.4L (SG)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 2.30...2.70

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 6.10...6.70

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750

Del. quantity cm³/
1000S.: 41.50...42.50
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 23.50...24.50

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 6.00...10.00
Del. quantity cm³/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 750
Del. quantity cm³/
1000S.: 10.00...14.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 0.50...1.30
mm: (0.20...1.60)
2nd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 2.30...2.70
mm: (1.80...3.20)
3rd speed 1/min: 2150
Charge press hPa: 750
TD travel mm: 4.40...5.20
mm: (4.10...5.50)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump
pressure bar: 3.70...4.30
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump
pressure bar: 6.10...6.70

3rd speed 1/min: 2150
Charge press. hPa: 750
Supply-pump
pressure bar: 7.80...8.40

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2150
Charge press. hPa: 750
Overflow : 55.50...139.00
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 4.5
Del. quantity cm³/: 32.50...33.50
1000s.: (30.00...36.00)

2nd speed 1/min: 2600
Charge press. hPa: 750
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 2400
Charge press. hPa: 750
Del. quantity cm³/: 10.00...14.00
1000s.: (8.00...16.00)

4th speed 1/min: 2300
Charge press. hPa: 750
Del. quantity cm³/: 20.50...30.50
1000s.: (19.50...31.50)

5th speed 1/min: 2150
Charge press. hPa: 750
Del. quantity cm³/: 35.50...37.50
1000s.: (34.30...38.70)

6th speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/: 41.50...42.50
1000s.: (39.80...44.20)

7th speed 1/min: 600
Charge press. hPa: 750
Del. quantity cm³/: 37.00...40.00
1000s.: (35.50...41.50)

8th speed 1/min: 600
Del. quantity cm³/: 23.50...24.50
1000s.: (21.00...27.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 6.00...10.00
1000s.: (4.00...12.00)

Dispersion cm³/: 2.0
1000s.: (3.0)

2nd speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Del. quantity cm³/: 25.00...75.00
1000s.: (25.00...75.00)

2nd speed 1/min: 500
Del. quantity cm³/: 7.00...27.00
1000s.: (7.00...27.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 6.3...6.6
MS	mm: 1.0...1.2
SVS max.	mm: 3.8
FH	mm: 1.8...2.4
Ya	mm: 31.5...33.5
Yb	mm: 51.0...63.3

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 05.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/10F2400L116-8
Type number : 0 460 405 077
Customer Part-No. :

Customer-specific information

Customer : VW

Engine : 072.4 (2.4L.) Vol

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 1.50...1.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 5.70...6.30

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/
1000S.: 42.60...43.60

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 26.70...27.70

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 415
Del. quantity cm³/
1000S.: 7.00...9.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2675
Charge press hPa: 750
Del. quantity cm³/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...70.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400
Charge press hPa: 750
TD travel mm: 3.70...4.50
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1200
Charge press hPa: 750
TD travel mm: 0.30...1.10
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump pressure bar: 3.30...3.90
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2400
Charge press. hPa: 750
Supply-pump pressure bar: 8.00...8.60
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(27.80...97.30)

2nd speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...138.90
(41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 4.8
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 33.50...34.50
(31.00...37.00)
2nd speed 1/min: 2850

Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

5th speed 1/min: 2675
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 11.00...15.00
(9.00...17.00)

8th speed 1/min: 2575
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 18.00...28.00
(17.00...29.00)

9th speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 36.30...38.30
(35.10...39.50)

12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 42.60...43.60
(40.90...45.30)

18th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 26.70...27.70
(24.20...30.20)

20th speed 1/min: 600
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 35.50...38.50
(34.00...40.00)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 2400
Charge press. hPa: 750
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:
1st speed 1/min: 415
Charge press. hPa: -
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 415
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000s.: (4.00...12.00)
Dispersion cm³/: 2.0
1000s.: (3.0)
2nd speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000s.: (30.00...70.00)

2nd speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000s.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000s.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 6.3...6.6
MS mm: 1.6...2.0
LDA stroke mm: 4.0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 04.06.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE3/11F1250L163-1
Type number : 0 460 413 002

Customer-specific information
Customer : IVECO-FIAT

Engine : 8035.06.200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172...175

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.80...3.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.70...6.30

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 62.50...63.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 15.50...19.50

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm³/
1000S.: 37.00...43.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 80.00...130.00
mind 1000S.: 80.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1250
TD travel mm: 4.40...5.20
mm: (4.10...5.50)

2nd speed 1/min: 1000
TD travel mm: 2.80...3.20
mm: (2.30...3.70)

3rd speed 1/min: 800
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3.40...4.00
2nd speed 1/min: 1000

Supply-pump
pressure bar: 5.70...6.30
3rd speed 1/min: 1250
Supply-pump
pressure bar: 6.80...7.40

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1250
Overflow quantity cm³/10s: (55.50...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1450
Del. quantity cm³/1000s.: (0.00...1.00)
3rd speed 1/min: 1400
Del. quantity cm³/1000s.: (4.00...16.00)
4th speed 1/min: 1350
Del. quantity cm³/1000s.: (37.00...43.00)
5th speed 1/min: 1250
Del. quantity cm³/1000s.: (61.50...64.50)
6th speed 1/min: 800
Del. quantity cm³/1000s.: (62.50...63.50)
7th speed 1/min: 500
Del. quantity cm³/1000s.: (53.50...56.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm³/1000s.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Del. quantity cm³/1000s.: (13.50...21.50)
Dispersion cm³/1000s.: (3.5)
2nd speed 1/min: 425
Del. quantity cm³/1000s.: (6.00...12.00)

3rd speed 1/min: 475
Del. quantity cm³/1000s.: (0.00...1.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm³/1000s.: (90.00...140.00)

2nd speed 1/min: 250
Del. quantity cm³/1000s.: (30.00...50.00)

4th speed 1/min: 100
Del. quantity cm³/1000s.: (80.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.4...1.8
SVS max. mm: 4.7
Ya mm: 37.9...39.9
Yb mm: 44.0...49.0

Overflow restriction 0.55 mm - Part No. ..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 05.06.92
replaces : 09.85
Calibrating oil : ISO-4113

Injection pump : VE3/11F1250L163-2
Type number : 0 460 413 004

Customer-specific information
Customer : IVECO-FIAT

Engine : 8035.06.220

Power KW: 33

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172...175

Test inj. tubing : 1 630 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 2.80...3.20

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 4.70...5.30

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm3/
1000S.: 59.00...60.00

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 10.50...14.50
Del. quantity cm3/
1000S.: 3.5
1000S.: 3.5

Full-load speed regulation

Speed 1/min: 1400
Del. quantity cm3/
1000S.: 12.00...18.00

Start:

Speed 1/min: 100
Del. quantity cm3/
mind 1000S.: 80.00...130.00
1000S.: 80.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0.80...1.60
mm: (0.50...1.90)
2nd speed 1/min: 800
TD travel mm: 2.80...3.20
mm: (2.30...3.70)
3rd speed 1/min: 1000
TD travel mm: 4.50...5.30
mm: (4.20...5.60)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3.20...3.80
2nd speed 1/min: 800
Supply-pump
pressure bar: 4.70...5.30
3rd speed 1/min: 1250
Supply-pump
pressure bar: 6.70...7.30

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.70...83.40
quantity cm3/10s: (41.70...83.40)
2nd speed 1/min: 1250

Overflow : 55.50...139.00
quantity cm³/10s: (55.50...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1450
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1400
Del. quantity cm³/: 12.00...18.00
1000s.: (12.00...18.00)
4th speed 1/min: 1350
Del. quantity cm³/: 37.00...53.00
1000s.: (35.00...55.00)
5th speed 1/min: 1250
Del. quantity cm³/: 51.50...54.50
1000s.: (49.50...56.50)
6th speed 1/min: 800
Del. quantity cm³/: 59.00...60.00
1000s.: (56.00...63.00)
7th speed 1/min: 500
Del. quantity cm³/: 54.00...57.00
1000s.: (52.00...59.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 10.50...14.50
1000s.: 8.50...16.50
Dispersion cm³/: 3.5
1000s.: (3.5)
2nd speed 1/min: 425
Del. quantity cm³/: 2.00...8.00
1000s.: (1.00...9.00)
3rd speed 1/min: 500
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Del. quantity cm³/: 20.00...50.00
1000s.: (20.00...50.00)

2nd speed 1/min: 150

Del. quantity cm³/: 80.00...130.00
1000s.: (80.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.1...5.4
MS mm: 1.5...1.7
SVS max. mm: 4.3
XK mm: 17.0...19.0
XL mm: 14.5...17.9
Ya mm: 37.9...39.9
Yb mm: 46.0...51.0

Overflow restriction 0.55 mm - Part No. ..303

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 05.06.92
replaces : 07.85
Calibrating oil : ISO-4113

Injection pump : VE3/11F1200L163-3
Type number : 0 460 413 005
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8035.05.265

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Test inj. tubing : Lochduese 0,6 mm

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 3.20...3.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 62.50...63.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm³/
1000S.: 15.00...21.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 90.00...140.00
mind 1000S.: 80.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 6.10...6.90
mm: (5.80...7.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
TD travel mm: 3.20...3.60
mm: (2.70...4.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1100
TD travel mm: 5.70...6.50
mm: (5.40...6.80)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump
 pressure bar: 2.90...3.50
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 Supply-pump
 pressure bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1200
 Supply-pump
 pressure bar: 6.00...6.60
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 5th speed 1/min: 1350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...21.00
 1000S.: (12.00...24.00)
 8th speed 1/min: 1300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33.00...49.00
 1000S.: (31.00...51.00)
 9th speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 56.00...59.00
 1000S.: (54.00...61.00)
 Shutoff
 electromagnet Volt: 12
 12th speed 1/min: 800

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 62.50...63.50
 1000S.: (60.00...66.00)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 59.50...62.50
 1000S.: (57.50...64.50)

Mech. shutoff:
 Mech. Abst.ellung:

1st speed 1/min: 1200
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 13.00...17.00
 1000S.: (11.00...19.00)
 Dispersion cm³/: 3.5
 1000S.: (3.5)
 2nd speed 1/min: 420
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 380
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.00...9.00
 1000S.: (2.00...10.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 100.00...150.00
 1000S.: (90.00...140.00)
 2nd speed 1/min: 250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...65.00
 1000S.: (25.00...65.00)
 4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...140.00
1000S.: (80.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.2...5.5
MS	mm: 1.5...1.7
SVS max.	mm: 4.0
Ya	mm: 37.9...39.9
Yb	mm: 44.5...49.5

Remarks:

⋮

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE
Edition : 12.06.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE3/11F1200R263-1
Type number : 0 460 413 007

Customer-specific information
Customer : STEYR

Engine : WD311-85

Power KW: 41

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 5.80...6.20

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 6.20...6.80

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 78.00...79.00
Dispersion cm³/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 11.00...15.00
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1300
Del. quantity cm³/
1000S.: 17.00...23.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 84.00...134.00
mind 1000S.: 84.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1200
TD travel mm: 6.90...7.70
mm: (6.60...8.00)
2nd speed 1/min: 1000
TD travel mm: 5.80...6.20
mm: (5.30...6.70)
3rd speed 1/min: 500
TD travel mm: 1.60...2.40
mm: (1.30...2.70)

Supply-pump pressure characteristic:

1st speed 1/min: 1200
Supply-pump
pressure bar: 7.00...7.60
2nd speed 1/min: 1000
Supply-pump
pressure bar: 6.20...6.80
3rd speed 1/min: 500
Supply-pump
pressure bar: 4.30...4.90

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1200
Overflow : 55.50...139.00
quantity cm³/10s: (55.50...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1350
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1300
Del. quantity cm³/: 17.00...23.00
1000s.: (15.00...25.00)
4th speed 1/min: 1250
Del. quantity cm³/: 41.00...57.00
1000s.: (39.00...59.00)
5th speed 1/min: 1200
Del. quantity cm³/: 74.50...77.50
1000s.: (73.70...78.30)
6th speed 1/min: 1000
Del. quantity cm³/: 78.00...79.00
1000s.: (76.20...80.80)
7th speed 1/min: 500
Del. quantity cm³/: 72.50...75.50
1000s.: (71.50...76.50)

Mech. shutoff:
Mech. Abst \ddot{u} llung:

1st speed 1/min: 1200
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 11.00...15.00
1000s.: (9.00...17.00)
Dispersion cm³/: 3.5
1000s.: (3.5)
2nd speed 1/min: 330
Del. quantity cm³/: 3.00...9.00
1000s.: (2.00...10.00)
3rd speed 1/min: 400
Del. quantity cm³/: 0.00...2.60
1000s.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 170
Del. quantity cm³/: 84.00...134.00
1000s.: (84.00...134.00)

2nd speed 1/min: 270
Del. quantity cm³/: 37.00...73.00
1000s.: (37.00...73.00)

4th speed 1/min: 100
Del. quantity cm³/: 84.00...134.00
1000s.: (84.00...134.00)

Shutoff electromagnet:

Cut-in
min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 1.2...1.6
SVS max. mm: 5.0
XK mm: 17.0...19.0
XL mm: 12.6...16.0
Ya mm: 37.2...39.2
Yb mm: 50.1...58.3

Remarks:
Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE
Edition : 12.06.92
replaces : 15.07.88
Calibrating oil : ISO-4113
Injection pump : VE3/11F1200R263-2
Type number : 0 463 413 008
Customer Part-No. :

Customer-specific information
Customer : STEYR

Engine : WD308-47/48

Power KW: 31

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...43
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 5.40...5.80

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.60...6.20

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 57.50...58.50
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 14.00...18.00
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1300
Del. quantity cm3/
1000S.: 8.00...14.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...100.00
mind 1000S.: 70.00

inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 6.70...7.50
mm: (6.40...7.80)
3rd speed 1/min: 1000
TD travel mm: 5.40...5.80
mm: (4.90...6.30)
4th speed 1/min: 500
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Supply-pump pressure characteristic:

1st speed 1/min: 1200
Supply-pump
pressure bar: 6.50...7.10
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.60...6.20
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.60...4.20

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 1200
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1330
Del. quantity cm³/1000s.: 0.00...3.00
5th speed 1/min: 1300
Del. quantity cm³/1000s.: 8.00...14.00
8th speed 1/min: 1250
Del. quantity cm³/1000s.: 29.00...45.00
9th speed 1/min: 1200
Del. quantity cm³/1000s.: 53.00...56.00
10th speed 1/min: 800
Del. quantity cm³/1000s.: 56.00...59.00
12th speed 1/min: 1000
Del. quantity cm³/1000s.: 57.50...58.50
20th speed 1/min: 500
Del. quantity cm³/1000s.: 49.50...52.50

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1200
Del. quantity cm³/1000s.: 0.00...3.00

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/1000s.: 14.00...18.00
Dispersion cm³/1000s.: 3.5
2nd speed 1/min: 330
Del. quantity cm³/1000s.: 5.00...11.00
3rd speed 1/min: 400
Del. quantity cm³/1000s.: 0.00...2.60

Automatic starting fuel delivery:

1st speed 1/min: 170
Del. quantity cm³/1000s.: 75.00...105.00

2nd speed 1/min: 250
Del. quantity cm³/1000s.: 36.00...46.00

4th speed 1/min: 100
Del. quantity cm³/1000s.: 70.00...100.00

Shutoff electromagnet:

Cut-in
min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 1.2...1.6
SVS max. mm: 4.1
XK mm: 17.0...19.0
XL mm: 11.7...15.1
Ya mm: 37.2...39.2
Yb mm: 48.0...56.4

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 05.06.92
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F1250L164
Type number : 0 460 414 013

Customer-specific information
Customer : IVECO-FIAT

Engine : 8045.05.200

Power KW: 58

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172...175

Perforated-plate
diameter mm: 6.0

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 5.10...5.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 73.50...74.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 21.00...25.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm³/
1000S.: 29.00...35.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 90.00...140.00
mind 1000S.: 90.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1.20...2.00
mm: (0.90...2.30)
Shutoff : -
electromagnet Volt: 12
2nd speed 1/min: 800
TD travel mm: 3.80...4.20
mm: (3.30...4.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250

TD travel mm: 7.60...8.40
mm: (7.30...8.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 3.60...4.20
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 800
Supply-pump pressure bar: 5.10...5.70
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1250
Supply-pump pressure bar: 7.00...7.60
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.50...139.00

2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.50...139.00

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (0.00...3.00)

3rd speed 1/min: 1380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (4.00...12.00)

4th speed 1/min: 1350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (26.00...38.00)

5th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (67.00...73.00)

6th speed 1/min: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (71.00...77.00)

7th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (62.50...68.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Del. quantity cm³/1000s.: (0.00...3.00)

Shutoff
electromagnet Volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (19.00...27.00)

Dispersion cm³/1000s.: (3.5)

2nd speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (0.00...8.00)

3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (0.00...1.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (90.00...140.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: (47.00...67.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...140.00
1000s.: (90.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.3...5.7
MS	mm: 1.4...1.8
SVS max.	mm: 4.6
Ya	mm: 37.9...39.9
Yb	mm: 44.1...49.1

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 05.06.92
replaces : 03.84
Calibrating oil : ISO-4113

Injection pump : VE4/11F1250L164-1
Type number : 0 450 414 015
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8045.06.200

Power KW: 53

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Test inj. tubing : Lochduese 0,6 mm

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 1.90...2.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 3.70...4.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 67.00...68.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 23.00...27.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1365
Del. quantity cm³/
1000S.: 29.00...35.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 90.00...140.00
mind 1000S.: 90.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 4.80...5.60
mm: (4.50...5.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
TD travel mm: 1.90...2.30
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600

TD travel mm: 0.20...0.80
mm: (-0.10...1.10)

Shutoff
electromagnet Volt: 12

5th speed 1/min: 1250

TD travel mm: 5.30...6.10
mm: (5.00...6.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump
pressure bar: 2.90...3.50

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800

Supply-pump
pressure bar: 3.70...4.30

Shutoff
electromagnet Volt: 12

4th speed 1/min: 1250

Supply-pump
pressure bar: 6.00...6.60

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1250

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1430

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1395

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...17.00
1000s.: (4.00...20.00)

5th speed 1/min: 1365

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.00...35.00
1000s.: (26.00...38.00)

9th speed 1/min: 1250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 59.50...62.50
1000s.: (58.00...64.00)

12th speed 1/min: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.00...68.00
1000s.: (64.50...70.50)

20th speed 1/min: 500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.50...63.50
1000s.: (59.00...65.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1250
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.00...27.00
1000s.: (21.00...29.00)

Dispersion cm³/: 3.5
1000s.: (3.5)

2nd speed 1/min: 480

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 425

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...8.00
1000s.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...140.00
1000s.: (90.00...140.00)

2nd speed 1/min: 250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...60.00
1000S.: (40.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...140.00
1000S.: (90.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.2...5.4
MS	mm: 1.5...1.7
SVS max.	mm: 4.3
Ya	mm: 37.9...39.9
Yb	mm: 43.6...48.6

Remarks:
Overflow restriction 0.55 mm - Part No.
..303 :

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 10.06.92
replaces : 09.05.89
Calibrating oil : ISO-4113
Injection pump : VE4/11F2250R228
Type number : 0 460 414 029

Customer-specific information
Customer : PERKINS

Engine : PRIMA 4.20

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery block
Piston stroke mm: 1.37
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
Setting value mm: 3.20...3.60
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

C01

Speed 1/min: 1800
Setting value bar: 6.20...6.80
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 19.00...20.00 F

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 42.80...43.80 E

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: -

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 8.00...10.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: -

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 23.50...25.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...100.00
mind 1000S.: 55.00
KSB/AFB
Valve Volt: 12

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2.30...2.50 A
mm: (1.60...3.20) A
electromagnet Volt: 12
2nd speed 1/min: 1200
TD travel mm: 2.10...4.10 B
mm: (1.90...4.30) B

Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1500
TD travel mm: 1.60...2.40
mm: (1.30...2.70)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
4th speed 1/min: 1800
TD travel mm: 3.20...3.60
mm: (2.80...4.00)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
5th speed 1/min: 2250
TD travel mm: 4.60...5.40
mm: (4.30...5.70)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Supply-pump pressure bar: 4.30...4.90

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1800

Supply-pump

pressure bar: 6.20...6.80

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2250

Supply-pump

pressure bar: 7.40...8.00

Overflow quantity at overflow valve:

C02

1st speed 1/min: 500

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 2250

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 2250

HBA-stroke

mm: 10.4

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 57.50...62.50 D
1000S.: (56.50...63.50) D

2nd speed 1/min: 2600

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)

3rd speed 1/min: 2500

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 23.50...25.50
1000S.: (20.50...28.50)

4th speed 1/min: 1000

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 42.80...43.80 E
1000S.: (39.80...46.80) E

5th speed 1/min: 500

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 19.00...20.00 F
1000S.: (17.00...22.00) F

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
KSB/AFB
valve Volt: 12

Idle delivery:

1st speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...10.00
1000S.: (5.00...13.00)
Dispersion cm³/: 3.0
1000S.: -
2nd speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: K-OT
MS mm: 1.1...1.5
SVS max. mm: 6.0
XK mm: 20.0...22.0
XL mm: 10.4...13.8
Ya mm: 37.0...39.0
Yb mm: 51.1...62.4

Remarks:

A = KSB adjustment point
B = KSB curve point

F = Adjustment point for low full-load

C03

delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
Edition : 11.06.92
replaces : 03.12.86
Calibrating oil : ISO-4113
Injection pump : VE4/11F1300L251
Type number : 0 460 414 037
Customer Part-No. :

Customer-specific information
Customer : VOLVO-PENTA

Engine : TD 31

Power KW: 49

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.2
(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.40...1.80

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 4.80...5.40

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 66.50...67.50
Dispersion cm3/: 3.0
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 45.00...46.00

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 18.00...22.00
Del. quantity cm3/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 20.00...26.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...110.00
mind 1000S.: 70.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.30...3.10
mm: (2.00...3.40)

3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.40...1.80
mm: (0.90...2.30)

4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.30...1.10
mm: (0.10...1.30)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 2.80...3.40
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4.80...5.40
 3rd speed 1/min: 1300
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.60...6.20

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1250
 Charge press. hPa: 1000
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900
 Charge-air pressure-setting point hPa: 300
 Del. quantity cm³/: 55.50...56.50
 1000S.: (53.70...58.30)
 3rd speed 1/min: 1480
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...6.00
 1000S.: (0.00...6.00)
 5th speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/: 20.00...26.00
 1000S.: (18.50...27.50)
 9th speed 1/min: 1250
 Charge press. hPa: 1000
 Del. quantity cm³/: 65.50...68.50
 1000S.: (64.00...70.00)
 12th speed 1/min: 1100
 Charge press. hPa: 1000
 Del. quantity cm³/: 66.50...67.50
 1000S.: (64.70...69.30)
 18th speed 1/min: 600
 Del. quantity cm³/: 45.00...46.00
 1000S.: (43.20...47.80)
 20th speed 1/min: 600
 Charge press. hPa: 1000
 Del. quantity cm³/: 54.50...58.50
 1000S.: (53.50...59.50)

Mech. shutoff:
 Mech. Abstimmung:

1st speed 1/min: 1480

C05

Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
 Del. quantity cm³/: 18.00...22.00
 1000S.: (16.00...24.00)
 Dispersion cm³/: 3.0
 1000S.: (3.5)
 2nd speed 1/min: 380
 Del. quantity cm³/: 4.50...11.50
 1000S.: (4.00...12.00)
 3rd speed 1/min: 420
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
 Del. quantity cm³/: 75.00...105.00
 1000S.: (75.00...105.00)
 2nd speed 1/min: 450
 Del. quantity cm³/: 43.00...58.00
 1000S.: (43.00...58.00)

4th speed 1/min: 100
 Del. quantity cm³/: 70.00...110.00
 1000S.: (70.00...110.00)

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: 5.6...6.0
 MS mm: 1.1...1.5
 Ya mm: 36.2...40.2
 Yb mm: 43.7...52.3

Remarks:

:
 :
 Pushing electromagnet.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet :
Edition : 12.06.92
replaces : 03.08.88
Calibrating oil : ISO-4113
Injection pump : VE4/11F1350R257
Type number : 0 460 414 039
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT
Engine : 8040.25.200+220

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.4
(from BDC): +0.02(0.04)

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 95.00...96.00

Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 68.50...69.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 22.00...26.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1500
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 34.00...40.00

Start:

Speed 1/min: 100
Del. quantity cm3/
mind 1000S.: 90.00...140.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350
Charge press hPa: 1000
TD travel mm: 6.30...7.10
mm: (6.00...7.40)

Shutoff

electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 3.80...4.20
mm: (3.30...4.70)

Shutoff

electromagnet Volt: 24
4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff

electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.60...4.20
Shutoff

electromagnet Volt: 24
2nd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 4.80...5.40
Shutoff

electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 24
4th speed 1/min: 1350
Charge press. hPa: 1000
Supply-pump pressure bar: 7.00...7.60
Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1350
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
Charge-air pressure-setting point hPa: 250
LDA-stroke mm: 3.0
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 79.00...80.00
1000S.: (75.50...83.50)

3rd speed 1/min: 1600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 34.00...40.00
1000S.: (31.00...43.00)

9th speed 1/min: 1350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 89.00...92.00
1000S.: (87.00...94.00)

12th speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 95.00...96.00
1000S.: (92.00...99.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 68.50...69.50
1000S.: (65.50...72.50)

20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 88.00...91.00
1000S.: (86.50...92.50)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24
Electr. shutoff:
1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:
1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 22.00...26.00
1000S.: (19.00...29.00)
Dispersion cm³/: 3.5
1000S.: (4.0)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 2.50...9.50
1000S.: (2.50...9.50)
3rd speed 1/min: 430
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:
1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 90.00...140.00
1000S.: (90.00...140.00)
2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...60.00
1000S.: (40.00...60.00)
4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 90.00...140.00
1000S.: (90.00...140.00)

Shutoff electromagnet:
Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:
KF mm: 5.1...5.5
MS mm: 1.2...1.6
SVS max. mm: 5.3

C08

XK mm: 17.0...19.0
XL mm: 14.2...17.6
Ya mm: 37.9...39.9
Yb mm: 45.4...50.7

Remarks:
Overflow restriction 0.55 mm - Part No.
..303

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 12.06.92
replaces : 03.08.88
Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R264
Type number : 0 460 414 040
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.05.200

Power KW: 65

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

009

Speed 1/min: 1000
Setting value mm: 3.50...3.90
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 55.00...56.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm³/
1000S.: 7.00...11.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1600
Del. quantity cm³/
1000S.: 38.00...44.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...110.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 6.20...7.00
mm: (5.90...7.30)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 3.50...3.90
mm: (3.00...4.40)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 700
 TD travel mm: 0.60...1.40
 mm: (0.30...1.70)

Shutoff
 electromagnet Volt: 24
 5th speed 1/min: 1300
 TD travel mm: 5.80...6.40
 mm: (5.40...6.80)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

2nd speed 1/min: 700
 Supply-pump pressure bar: 3.20...3.80
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Supply-pump pressure bar: 4.50...5.10
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 1500
 Supply-pump pressure bar: 6.30...6.90
 Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)
 2nd speed 1/min: 1500
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1660
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 18.00...26.00
 1000S.: (17.00...27.00)
 3rd speed 1/min: 1700
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 5th speed 1/min: 1600
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 38.00...44.00
 1000S.: (35.00...47.00)
 9th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 51.50...54.50
 1000S.: (50.00...56.00)
 10th speed 1/min: 1300
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 51.00...54.00
 1000S.: (49.50...55.50)
 12th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 55.00...56.00
 1000S.: (52.50...58.50)
 20th speed 1/min: 700
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 53.00...56.00
 1000S.: (51.50...57.50)

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 1500
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 325
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 325
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 7.00...11.00
 1000S.: (5.00...13.00)
 Dispersion cm³/: 3.5
 1000S.: (3.5)
 2nd speed 1/min: 360
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 1.50...7.50
 1000S.: (0.50...8.50)
 3rd speed 1/min: 420
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...95.00
1000S.: (65.00...95.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.00...25.00
1000S.: (5.00...25.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.2...5.5
MS	mm: 1.7...2.1
SVS max.	mm: 4.6
XK	mm: 17.0...19.0
XL	mm: 13.1...16.5
Ya	mm: 37.9...39.9
Yb	mm: 42.9...48.3

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 12.06.92
replaces : 20.07.87
Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R266
Type number : 0 460 414 041
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : 500 HYDROVAN

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.5
(from BDC): $\pm 0.02(0.04)$

Indicator setting
Piston stroke mm: 1.42
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 2.40...2.80

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 25.00...26.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1600
Del. quantity cm³/
1000S.: 12.00...18.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 3.70...4.50
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD travel mm: 2.40...2.80
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 700

TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

5th speed 1/min: 1350

TD travel mm: 3.40...4.20
mm: (3.10...4.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700

Supply-pump pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1100

Supply-pump pressure bar: 4.90...5.50

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500

Supply-pump pressure bar: 6.40...7.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600

Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 1500

Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1650

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

5th speed 1/min: 1600

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 12.00...18.00
(10.00...20.00)

9th speed 1/min: 1500

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 48.50...51.50
(47.00...53.00)

10th speed 1/min: 1100

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 49.50...52.50
(48.00...54.00)

11th speed 1/min: 800

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 35.00...37.00
-

12th speed 1/min: 600

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 25.00...26.00
(23.00...28.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350

Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Idle delivery:

1st speed 1/min: 350

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 11.00...15.00
(9.00...17.00)

Dispersion cm³/1000S.: 3.0
(3.0)

2nd speed 1/min: 400

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 3.00...9.00
(1.50...10.50)

3rd speed 1/min: 460

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 0.00...5.00
(0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 36.00...52.00
(36.00...52.00)

2nd speed 1/min: 400

Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 27.50...42.50
(27.50...42.50)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
min. voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 1.2..1.45
SVS max.	mm: 3.8
Ya	mm: 28.5...30.5
Yb	mm: 59.7...70.1

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 12.06.92
replaces : 07.11.88
Calibrating oil : ISO-4113

Injection pump : VE4/11F2250R274
Type number : 0 460 414 045
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : MARINE TC 4500

Power KW: 60

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.28
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 4.20...4.60

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 800
Setting value bar: 7.10...7.70

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm3/
1000S.: 61.00...62.00
Dispersion cm3/: 4.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 15.00...16.00
Dispersion cm3/: 4.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 10.00...12.00
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
Charge press hPa: 800
Del. quantity cm3/
1000S.: 24.00...26.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 62.00...98.00
mind 1000S.: 62.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1500
Charge press hPa: 800
TD travel mm: 4.20...4.60
mm: (3.70...5.10)

4th speed 1/min: 1000
Charge press hPa: 800
TD travel mm: 1.20...2.00
mm: (0.90...2.30)

5th speed 1/min: 1800
Charge press. hPa: 800

TD travel mm: 4.90...5.70
mm: (4.60...6.00)

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
Supply-pump pressure bar: 6.10...6.70
2nd speed 1/min: 1500
Charge press. hPa: 800
Supply-pump pressure bar: 7.10...7.70
3rd speed 1/min: 1800
Charge press. hPa: 800
Supply-pump pressure bar: 7.70...8.30

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 800
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 2250
Charge press. hPa: 800
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
Charge-air pressure-setting point hPa: 300
Del. quantity cm³/1000s.: 35.50...36.50
3rd speed 1/min: 2600
Charge press. hPa: 800
Del. quantity cm³/1000s.: 0.50...6.50
5th speed 1/min: 2500
Charge press. hPa: 800
Del. quantity cm³/1000s.: 24.00...26.00
9th speed 1/min: 2250
Charge press. hPa: 800
Del. quantity cm³/1000s.: 64.50...68.50
12th speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/1000s.: 61.00...62.00
18th speed 1/min: 600
Del. quantity cm³/1000s.: 15.00...16.00
20th speed 1/min: 600
Charge press. hPa: 800
Del. quantity cm³/1000s.: 52.00...58.00

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 2250
Charge press. hPa: 800
Del. quantity cm³/1000s.: 0.00...3.00

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/1000s.: 0.00...3.00

Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 400
Del. quantity cm³/1000s.: 10.00...12.00
Dispersion cm³/1000s.: 3.0
2nd speed 1/min: 500
Del. quantity cm³/1000s.: 2.00...8.00

Automatic starting fuel delivery:

2nd speed 1/min: 500
Del. quantity cm³/1000s.: 10.00...30.00
4th speed 1/min: 100
Del. quantity cm³/1000s.: 62.00...98.00

Shutoff electromagnet:

Cut-in min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation mm: 3.2...3.4
K mm: K-0T
MS mm: 0.6...1.0
Ya mm: 37.2...39.2
Yb mm: 54.0...66.0

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

* Correction at adjusting nut (46)

Pushing electromagnet.



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 12.06.92
replaces : 11.11.78
Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R275
Type number : 0 460 414 046
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : 500 SERIES FLT BS

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.5
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 2.50...2.90
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 4.90...5.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Del. quantity cm³/
1000S.: 46.00...47.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm³/
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 10.00...14.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1550
Del. quantity cm³/
1000S.: 27.00...37.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/
mind 1000S.: 70.00...100.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350

TD travel mm: 3.60...4.40
 mm: (3.30...4.70)
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1100
 TD travel mm: 2.50...2.90
 mm: (2.00...3.40)
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 700
 TD travel mm: 0.10...0.90
 mm: (-0.20...1.20)
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 5th speed 1/min: 1500
 TD travel mm: 3.70...4.50
 mm: (3.40...4.80)
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 8th speed 1/min: 700
 TD travel mm: 1.50...2.90
 mm: (1.00...3.40)
 Shutoff electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 700
 Supply-pump pressure bar: 3.50...4.10
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 2nd speed 1/min: 1100
 Supply-pump pressure bar: 4.90...5.50
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1500
 Supply-pump pressure bar: 6.40...7.00
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 600

KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)
 2nd speed 1/min: 1450
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1630
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 0.00...3.00
 (0.00...3.00)
 3rd speed 1/min: 1570
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 8.00...24.00
 (6.00...26.00)
 5th speed 1/min: 1550
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 27.00...37.00
 (26.00...38.00)
 9th speed 1/min: 1450
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 45.00...48.00
 (43.50...49.50)
 12th speed 1/min: 1200
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 46.00...47.00
 (44.00...49.00)
 15th speed 1/min: 800
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 29.50...32.50
 -
 20th speed 1/min: 600

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...23.00
1000S.: (18.50...24.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

KSB/AFB
valve Volt: 12

Idle delivery:

1st speed 1/min: 300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 430
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 350
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...9.00
1000S.: (1.50...10.50)

Automatic starting fuel delivery:

1st speed 1/min: 300
KSB/AFB
valve Volt: 12
Timing valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.00...45.00
1000S.: (29.00...45.00)

2nd speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 19.00...35.00
1000S.: (19.00...35.00)

4th speed 1/min: 100

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: K-OT
MS mm: 0.9..1.15
SVS max. mm: 3.1
XK mm: 17.0...19.0
XL mm: 11.9...15.3
Ya mm: 37.0...39.0
Yb mm: 58.7...69.5

Remarks:
Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC
Edition : 09.06.92
replaces : 12.12.86
Calibrating oil : ISO-4113

Injection pump : VE4/11F1090R176-1
Type number : 0 460 414 050

Customer-specific information
Customer : IHC-CASE

Engine : D239-E333, V833

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172...175

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 240

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
Setting value mm: 4.80...5.20

Supply-pump pressure

Speed 1/min: 800

C21

Setting value bar: 5.10...5.70

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 81.50...82.50
Dispersion cm³/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 21.50...25.50
Del. quantity cm³/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1200
Del. quantity cm³/
1000S.: 12.00...18.00

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 100

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
TD travel mm: 1.70...2.50
mm: (1.40...2.80)
2nd speed 1/min: 800
TD travel mm: 4.80...5.20
mm: (4.30...5.70)
3rd speed 1/min: 1050
TD travel mm: 5.40...6.20
mm: (5.10...6.50)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 3.50...4.10
2nd speed 1/min: 800
Supply-pump
pressure bar: 5.10...5.70
3rd speed 1/min: 1050
Supply-pump
pressure bar: 6.00...6.60

Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 55.50...139.00
quantity cm³/10s: (40.50...153.00)
2nd speed 1/min: 1090
Overflow : 55.50...139.00
quantity cm³/10s: (40.50...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1270
Del. quantity cm³/: 0.00...2.00
1000s.: (0.00...2.00)
3rd speed 1/min: 1200
Del. quantity cm³/: 12.00...18.00
1000s.: (10.50...19.50)
4th speed 1/min: 1150
Del. quantity cm³/: 47.00...53.00
1000s.: (45.50...54.50)
5th speed 1/min: 1050
Del. quantity cm³/: 78.50...81.50
1000s.: (77.40...82.60)
6th speed 1/min: 800
Del. quantity cm³/: 81.50...82.50
1000s.: (79.40...84.60)
7th speed 1/min: 650
Del. quantity cm³/: 75.00...79.00
1000s.: (73.60...80.40)
8th speed 1/min: 500
Del. quantity cm³/: 65.50...69.50
1000s.: (64.10...70.90)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1090
Del. quantity cm³/: -
1000s.: -

Idle delivery:

1st speed 1/min: 350
Del. quantity cm³/: 21.50...25.50
1000s.: (19.00...28.00)
Dispersion cm³/: 3.5
1000s.: -
2nd speed 1/min: 400
Del. quantity cm³/: 4.50...10.50
1000s.: (3.00...12.00)
3rd speed 1/min: 460
Del. quantity cm³/: 0.00...2.00
1000s.: (0.00...2.00)

Automatic starting fuel delivery:

1st speed 1/min: 220
Del. quantity cm³/: 100.00...
1000s.: -

2nd speed 1/min: 340

Del. quantity cm³/: ...70.00
1000s.: -

4th speed 1/min: 100
Del. quantity cm³/: 100.00...
1000s.: -

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.1...5.4
MS	mm: 1.0...1.25
SVS max.	mm: 3.2
Ya	mm: 37.2...39.2
Yb	mm: 46.8...56.8

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 15.06.92
replaces : 21.07.88
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R290
Type number : 0 460 414 053
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : Prima 4000NA MARINE

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.37
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
Setting value mm: 3.20...3.60
AFB/AFB
valve Volt: 12

Supply-pump pressure

Speed 1/min: 1800
Setting value bar: 6.20...6.80
KSB/AFB
valve Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 17.50...18.50

KSB/AFB
valve Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 8.00...10.00

KSB/AFB
valve Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2150
Del. quantity cm³/
1000S.: 23.50...25.50

KSB/AFB
valve Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 55.00...85.00
mind 1000S.: 55.00

KSB/AFB
Valve Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 3.70...4.50
mm: (3.40...4.80)

KSB/AFB
valve Volt: 12
3rd speed 1/min: 1800
TD travel mm: 3.20...3.60
mm: (2.70...4.10)

KSB/AFB
valve Volt: 12
4th speed 1/min: 1500

TD travel mm: 1.60...2.40
mm: (1.30...2.70)

KSB/AFB valve Volt: 12

8th speed 1/min: 1200

TD travel mm: 2.10...4.10
mm: (1.90...4.30)

9th speed 1/min: 500

TD travel mm: 2.30...2.50
mm: (1.60...3.20)

Supply-pump pressure characteristic:

1st speed 1/min: 2000

Supply-pump pressure bar: 6.80...7.40

KSB/AFB valve Volt: 12

2nd speed 1/min: 1800

Supply-pump pressure bar: 6.20...6.80

KSB/AFB valve Volt: 12

4th speed 1/min: 1000

Supply-pump pressure bar: 4.30...4.90

KSB/AFB valve Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

KSB/AFB valve Volt: 12

Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 2000

KSB/AFB valve Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2200

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 0.00...15.00
(0.00...15.00)

5th speed 1/min: 2150

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 23.50...25.50
(20.50...28.50)

9th speed 1/min: 2000

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 60.00...65.00
(59.00...66.00)

12th speed 1/min: 500

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 17.50...18.50
(13.00...23.00)

Mech. shutoff:
Mech. Abst.:

1st speed 1/min: 2000

Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

KSB/AFB valve Volt: 12

Electr. shutoff:

1st speed 1/min: 400

Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff electromagnet volt: 12

KSB/AFB valve Volt: 12

Idle delivery:

1st speed 1/min: 400

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 8.00...10.00
(5.00...13.00)

Dispersion cm³/1000s.: 3.0
(3.0)

4th speed 1/min: 500

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 1.00...7.00
-

Automatic starting fuel delivery:

2nd speed 1/min: 450

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 20.00...40.00
(20.00...40.00)

4th speed 1/min: 100

KSB/AFB valve Volt: 12

Del. quantity cm³/1000s.: 55.00...85.00
(55.00...85.00)

Shutoff electromagnet:

Cut-in min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.0...5.4
MS	mm: 1.1...1.5
SVS max.	mm: 5.7
Ya	mm: 37.0...39.0
Yb	mm: 66.8...68.2

Remarks:

:
Overflow restriction 0.55 mm - Part No.
..303



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/11F1200R277-2
Type number : 0 460 414 C77
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : D 268/985

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
Setting value mm: 4.50...4.90

Supply-pump pressure

Speed 1/min: 700
Setting value bar: 3.40...4.00

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 92.00...93.00
Dispersion cm3/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 16.50...20.50
Del. quantity cm3/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1260
Del. quantity cm3/
1000S.: 71.00...77.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 95.00...145.00
mind 1000S.: 95.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
TD travel mm: 7.20...8.00
mm: (6.90...8.30)
3rd speed 1/min: 700
TD travel mm: 4.50...4.90
mm: (4.00...5.40)
4th speed 1/min: 500
TD travel mm: 2.60...3.40
mm: (2.30...3.70)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.70...3.30
2nd speed 1/min: 700
Supply-pump
pressure bar: 3.40...4.00
3rd speed 1/min: 1150
Supply-pump
pressure bar: 5.00...5.60

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)

2nd speed 1/min: 1150
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1260
Del. quantity cm³/: 71.00...77.00
1000S.: (69.50...78.50)

8th speed 1/min: 1290
Del. quantity cm³/: 10.00...60.00
1000S.: (10.00...60.00)

9th speed 1/min: 1150
Del. quantity cm³/: 94.00...97.00
1000S.: (92.50...98.50)

12th speed 1/min: 700
Del. quantity cm³/: 92.00...93.00
1000S.: (90.00...95.00)

17th speed 1/min: 1340
Del. quantity cm³/: 0.00...10.00
1000H.: (0.00...10.00)

20th speed 1/min: 500
Del. quantity cm³/: 89.50...93.50
1000S.: (88.00...95.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1150
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery.

1st speed 1/min: 375
Del. quantity cm³/: 16.50...20.50
1000S.: (14.00...23.00)

Dispersion cm³/: 3.0
1000S.: (3.5)

2nd speed 1/min: 450
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: 110.00...130.00
1000S.: (110.00...130.00)

2nd speed 1/min: 450
Del. quantity cm³/: 90.00...110.00
1000S.: (90.00...110.00)

4th speed 1/min: 100
Del. quantity cm³/: 95.00...145.00
1000S.: (95.00...145.00)

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 0.9...1.1

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS
 Edition : 05.06.92
 replaces : -
 Calibrating oil : ISO-4113

 Injection pump : VE4/11F1200R277-3
 Type number : 0 450 414 084
 Customer Part-No. :

Customer-specific information
 Customer : CASE

Engine : DT 268/985 NAO

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 700
 Setting value mm: 4.50...4.90

Supply-pump pressure

Speed 1/min: 700
 Setting value bar: 3.40...4.00

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 109.50...110.50
 Dispersion cm³/: 3.5
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 16.50...20.50
 Del. quantity cm³/: 3.0
 1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1260
 Del. quantity cm³/
 1000S.: 71.00...77.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 95.00...145.00
 mind 1000S.: 95.00

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
 TD travel mm: 7.20...8.00
 mm: (6.90...8.30)
 3rd speed 1/min: 700
 TD travel mm: 4.50...4.90
 mm: (4.00...5.40)
 4th speed 1/min: 500
 TD travel mm: 2.60...3.40
 mm: (2.30...3.70)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump
 pressure bar: 2.70...3.30
 2nd speed 1/min: 700
 Supply-pump
 pressure bar: 3.40...4.00
 3rd speed 1/min: 1150
 Supply-pump
 pressure bar: 4.90...5.50

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1150
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1340
Del. quantity cm³/: 0.00...10.00
1000S.: (0.00...10.00)
4th speed 1/min: 1290
Del. quantity cm³/: 10.00...60.00
1000S.: (10.00...60.00)
5th speed 1/min: 1260
Del. quantity cm³/: 71.00...77.00
1000S.: (69.50...78.50)
9th speed 1/min: 1150
Del. quantity cm³/: 103.50...106.50
1000S.: (102.00...108.00)
12th speed 1/min: 700
Del. quantity cm³/: 109.50...110.50
1000S.: (107.50...112.50)
20th speed 1/min: 500
Del. quantity cm³/: 101.00...105.00
1000S.: (99.50...106.50)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 1150
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery.

1st speed 1/min: 375
Del. quantity cm³/: 16.50...20.50
1000S.: (14.00...23.00)
Dispersion cm³/: 3.0
1000S.: (3.5)
2nd speed 1/min: 450
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: 110.00...130.00
1000S.: (110.00...130.00)
2nd speed 1/min: 450
Del. quantity cm³/: 90.00...110.00
1000S.: (90.00...110.00)
4th speed 1/min: 100
Del. quantity cm³/: 95.00...145.00
1000S.: (95.00...145.00)

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 0.9...1.1
SVS max. mm: 1.2

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 09.06.92
replaces : 03.12.86
Calibrating oil : ISO-4113

Injection pump : VES/11F1900L179
Type number : 0 460 415 007
Customer Part-No. :

Customer-specific information
Customer : VM MOTORI

Engine : HR 592 HTJ/9 2.991L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 4.90...5.30
Shutoff
electromagnet Volt: 12

D02

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 66.50...67.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 41.50...42.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 420
Del. quantity cm³/
1000S.: 20.50...24.50

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2060
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 36.00...42.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...76.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900
Charge press hPa: 1000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 4.90...5.30
mm: (4.40...5.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.50...2.30
mm: (1.20...2.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1900
Charge press. hPa: 1000
Supply-pump pressure bar: 6.00...6.60
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump pressure bar: 4.70...5.30
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 1.70...2.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
cm³/10s: (40.50...153.00)

2nd speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 300

LDA-stroke mm: 4.5
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 51.00...52.00
cm³/1000s.: (48.10...54.90)

3rd speed 1/min: 2200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...3.00
cm³/1000s.: (0.00...3.00)

5th speed 1/min: 2060
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 36.00...42.00
cm³/1000s.: (34.50...43.50)

8th speed 1/min: 2160
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 2.00...8.00
cm³/1000s.: (0.50...09.5)

9th speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 59.00...62.00
cm³/1000s.: (57.80...63.20)

12th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 66.50...67.50
cm³/1000s.: (64.30...69.70)

18th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 41.50...42.50
cm³/1000s.: (38.60...45.40)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 1900

Idle delivery:

1st speed 1/min: 420
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 20.50...24.50
cm³/1000s.: (18.00...27.00)

Dispersion cm³/1000s.: 3.5
cm³/1000s.: (3.5)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 14.00...20.00
1000S.: (12.50...21.50)
4th speed 1/min: 650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.00
1000S.: (0.00...2.00)

Automatic starting fuel delivery:

1st speed 1/min: 280
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...76.00
1000S.: (50.00...76.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.00...55.00
1000S.: (29.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...76.00
1000S.: (50.00...76.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.9...6.1
MS mm: 0.9...1.1
SVS max. mm: 3.2
LDA stroke mm: 4.5

Remarks:

:
Pushing electromagnet.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 09.06.92
replaces : 03.08.88
Calibrating oil : ISO-4113
Injection pump : VE6/11F1900L178
Type number : 0 460 416 035
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR692HTJ/9

Power KW: 132

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder assembly : 1 688 901 000

Opening Pressure bar: 147.00...150.00

Perforated-plate diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +/-0.02(0.04)

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

D05

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 4.70...5.10

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 5.50...6.10

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/ 1000S.: 66.00...67.00
Dispersion cm3/: 3.5
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/ 1000S.: 47.50...48.50

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/ 1000S.: 18.00...22.00
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2000
Charge press hPa: 750
Del. quantity cm3/ 1000S.: 46.00...52.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1850
Charge press hPa: 750
TD travel mm: 6.50...7.30
mm: (6.20...7.60)
3rd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 4.70...5.10
mm: (4.20...5.60)

4th speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Supply-pump pressure characteristic:

1st speed 1/min: 1850
Charge press. hPa: 750
Supply-pump pressure bar: 6.70...7.30
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump pressure bar: 5.50...6.10
3rd speed 1/min: 600
Charge press. hPa: 750
Supply-pump pressure bar: 2.40...3.00

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 750
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 1850
Charge press. hPa: 750
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 4.0
Del. quantity cm³/1000S.: 53.00...54.00
2nd speed 1/min: 2130
Charge press. hPa: 750
Del. quantity cm³/1000S.: 2.50...10.50

5th speed 1/min: 2000
Charge press. hPa: 750
Del. quantity cm³/1000S.: 46.00...52.00

9th speed 1/min: 1850
Charge press. hPa: 750
Del. quantity cm³/1000S.: 61.00...64.00

12th speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/1000S.: 66.00...67.00

18th speed 1/min: 600
Del. quantity cm³/1000S.: 47.50...48.50

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1850
Del. quantity cm³/1000S.: 0.00...3.00

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/1000S.: 0.00...3.00

Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 400
Del. quantity cm³/1000S.: 18.00...22.00

Dispersion cm³/1000S.: 3.5

2nd speed 1/min: 500
Del. quantity cm³/1000S.: 7.50...12.50

4th speed 1/min: 600
Del. quantity cm³/1000S.: 0.00...4.00

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/1000S.: 45.00...85.00

2nd speed 1/min: 450
Del. quantity cm³/1000S.: 28.00...48.00

4th speed 1/min: 100
Del. quantity cm³/1000S.: 40.00...80.00

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: 6.2...6.6
MS mm: 0.8...1.2
SVS max. mm: 4.7
Ya mm: 37.2...39.2
Yb mm: 50.5...58.5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 09.06.92
replaces : 16.12.86
Calibrating oil : ISO-4113
Injection pump : VE6/11F1250R181
Type number : 0 460 416 036
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8065.05.200

TEST BENCH REQUIREMENTS

Calibrating oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 4.90...5.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.20...5.80

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm3/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm3/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm3/
1000S.: 33.00...39.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 95.00...145.00
mind 1000S.: 95.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
TD travel mm: 4.90...5.30
mm: (4.40...5.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
TD travel mm: 5.40...6.20
mm: (5.10...6.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 3.10...3.70
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1000
 Supply-pump pressure bar: 5.20...5.80
 Shutoff electromagnet Volt: 12
 4th speed 1/min: 1250
 Supply-pump pressure bar: 6.30...6.90
 Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 2nd speed 1/min: 1250
 Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1450
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1400
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 2.00...9.00
 1000S.: (1.00...10.00)
 5th speed 1/min: 1350
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 33.00...39.00
 1000S.: (30.00...42.00)
 9th speed 1/min: 1250
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 53.00...56.00
 1000S.: (51.50...57.50)
 12th speed 1/min: 800
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 63.50...64.50
 1000S.: (61.00...67.00)
 20th speed 1/min: 500
 Shutoff electromagnet Volt: 12

Del. quantity cm³/: 58.50...61.50
 1000S.: (57.00...63.00)

Mech. shutoff:
 Mech. Abst.ellung:

1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 325
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 325
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 8.00...12.00
 1000S.: (6.00...14.00)
 Dispersion cm³/: 3.5
 1000S.: (4.0)
 2nd speed 1/min: 400
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 360
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 2.00...8.00
 1000S.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 95.00...145.00
 1000S.: (95.00...145.00)
 2nd speed 1/min: 250
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 40.00...60.00
 1000S.: (40.00...60.00)
 4th speed 1/min: 100
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 95.00...145.00
 1000S.: (95.00...145.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.4
MS	mm: 1.5...1.7
SVS max.	mm: 4.3
XK	mm: 25.0...27.0
XL	mm: 13.4...16.8
Ya	mm: 34.9...36.9
Yb	mm: 45.8...51.1

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 09.06.92
replaces : 09.85
Calibrating oil : ISO-4113
Injection pump : VE6/11F1500R196
Type number : 0 460 416 042
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.05.200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 3.20...3.60
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.40...6.00

Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1300
Del. quantity cm3/
1000S.: 70.50...71.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm3/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1650
Del. quantity cm3/
1000S.: 37.00...43.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/
mind 1000S.: 76.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400
TD travel mm: 6.20...7.00
mm: (5.90...7.30)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 3.20...3.60
mm: (2.70...4.10)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 700
TD travel mm: 0.50...1.30
mm: (0.20...1.60)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 700
 Supply-pump pressure bar: 4.20...4.80
 Shutoff electromagnet Volt: 24
 2nd speed 1/min: 1000
 Supply-pump pressure bar: 5.40...6.00
 Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1500
 Supply-pump pressure bar: 7.20...7.80
 Shutoff electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Overflow quantity cm3/10s: (41.70...83.40)
 2nd speed 1/min: 1500
 Shutoff electromagnet Volt: 24
 Overflow quantity cm3/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1750
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (0.00...3.00)
 5th speed 1/min: 1650
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (34.00...46.00)
 8th speed 1/min: 1600
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (45.00...55.00)
 9th speed 1/min: 1500
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (64.50...70.50)
 Shutoff electromagnet Volt: 24
 12th speed 1/min: 1300
 Shutoff electromagnet Volt: 24

Del. quantity cm3/1000S.: (70.50...71.50)
 15th speed 1/min: 800
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (66.50...69.50)
 20th speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (57.00...61.00)
 1000S.: (55.50...62.50)

Mech. shutoff:
Mech. Abstellur:g:

1st speed 1/min: 1500
 Del. quantity cm3/1000S.: (0.00...3.00)

Shutoff electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 325
 Del. quantity cm3/1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 325
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (8.00...12.00)

Dispersion cm3/1000S.: (3.0...4.0)

2nd speed 1/min: 450
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 200
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (80.00...130.00)

2nd speed 1/min: 320
 Shutoff electromagnet Volt: 24
 Del. quantity cm3/1000S.: (24.00...44.00)

4th speed 1/min: 100
 Shutoff electromagnet Volt: 24

Del. quantity cm3/: 76.00...126.00
1000s.: (76.00...126.00)

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.7...5.9
MS	mm: 1.9...2.1
XK	mm: 17.0...19.0
XL	mm: 10.6...14.0
Ya	mm: 37.9...39.9
Yb	mm: 41.9...47.3

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 09.06.92
replaces : 23.08.89
Calibrating oil : ISO-4113

Injection pump : VE6/11F1250R181-1
Type number : 0 460 416 046
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8065.05.290

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 4.70...5.10
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000

Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 71.00...72.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 20.00...24.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1380
Del. quantity cm³/
1000S.: 21.00...27.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 100.00...150.00
mind 1000S.: 100.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
TD travel mm: 4.70...5.10
mm: (4.20...5.60)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 600
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1250
TD travel mm: 5.30...6.10
mm: (5.00...6.40)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

2nd speed 1/min: 600
Supply-pump pressure bar: 4.60...5.20
Shutoff electromagnet Volt: 24
3rd speed 1/min: 1000
Supply-pump pressure bar: 6.20...6.80
Shutoff electromagnet Volt: 24
4th speed 1/min: 1250
Supply-pump pressure bar: 7.20...7.80
Shutoff electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)
2nd speed 1/min: 1250
Shutoff electromagnet Volt: 24
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1450
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
5th speed 1/min: 1380
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 21.00...27.00
(18.00...30.00)
8th speed 1/min: 1330
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 48.50...55.50
-
9th speed 1/min: 1250
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 61.00...64.00
(59.00...66.00)
12th speed 1/min: 800
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 71.00...72.00
(68.50...74.50)

20th speed 1/min: 600
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 68.50...71.50
(66.50...73.50)

Mech. shutoff:
Mech. Abst.:

1st speed 1/min: 1250
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 20.00...24.00
(18.00...26.00)

Dispersion cm³/1000s.: 3.5
(4.0)

2nd speed 1/min: 520
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
3rd speed 1/min: 450
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 7.00...13.00
(6.00...14.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 100.00...150.00
(100.00...150.00)

2nd speed 1/min: 250
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 57.50...77.50
(57.50...77.50)

4th speed 1/min: 100
Shutoff electromagnet Volt: 24
Del. quantity cm³/1000s.: 100.00...150.00
(100.00...150.00)

Shutoff electromagnet:

Cut-in
min voltage : 22.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.4
MS	mm: 1.5...1.7
SVS max.	mm: 4.3
XK	mm: 17.0...19.0
XL	mm: 13.5...16.9
Ya	mm: 37.9...39.9
Yb	mm: 44.5...49.5

Remarks:

⋮

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
Edition : 09.06.92
replaces : 18.07.89
Calibrating oil : ISO-4113

Injection pump : VE6/11F1900L218-8
Type number : 0 460 416 065
Customer Part-No. :

Customer-specific information
Customer : PENTA

Engine : TAMD 41 B

Power KW: 132

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3.30...3.70

Supply-pump pressure

Speed 1/min: 1200
Charge press hPa: 1000
Setting value bar: 5.90...6.50

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 99.50...100.50
Dispersion cm³/
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm³/
1000S.: 66.50...67.50

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm³/
1000S.: 25.00...29.00
Del. quantity cm³/
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2050
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 34.00...40.00

Start:

Speed 1/min: 100
Del. quantity cm³/
mind 1000S.: 80.00...120.00
1000S.: 80.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 3.30...3.70
mm: (2.80...4.20)

4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.00...2.00
mm: (0.80...2.20)

5th speed 1/min: 1900
Charge press. hPa: 1000
TD travel mm: 4.00...4.80
mm: (3.70...5.10)

7.Rotacao 1/min: 1000
Charge press. hPa: 1000

TD travel mm: 2.30...3.10
mm: (2.00...3.40)

Supply-pump pressure characteristic:

1st speed 1/min: 1900
Charge press. hPa: 1000
Supply-pump pressure bar: 7.40...8.00
2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 5.90...6.50
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 5.00...5.60

Overflow quantity at overflow valve:

1st speed 1/min: 650
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 1900
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting point hPa: 200
LDA-stroke mm: 4.5
Del. quantity cm³/1000S.: 78.50...79.50
2nd speed 1/min: 2200
Charge press. hPa: 1000
Del. quantity cm³/1000S.: (72.00...86.00)
3rd speed 1/min: 2100
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 12.00...28.00
5th speed 1/min: 2050
Charge press. hPa: 1000
Del. quantity cm³/1000S.: (31.00...43.00)
9th speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 88.00...92.00
12th speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 99.50...100.50
14th speed 1/min: 800
Del. quantity cm³/1000S.: (67.00...74.00)

15th speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 102.50...105.50
18th speed 1/min: 650
Del. quantity cm³/1000S.: (64.00...70.00)
20th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 88.00...92.00

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...3.00

Electr. shutoff:

1st speed 1/min: 325
Del. quantity cm³/1000S.: 0.00...3.00
Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 325
Del. quantity cm³/1000S.: 25.00...29.00
Dispersion cm³/1000S.: 3.5
2nd speed 1/min: 480
Del. quantity cm³/1000S.: 0.00...3.00
3rd speed 1/min: 400
Del. quantity cm³/1000S.: 5.00...11.00

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³/1000S.: 70.00...100.00
2nd speed 1/min: 500
Del. quantity cm³/1000S.: 50.00...70.00
4th speed 1/min: 100
Del. quantity cm³/1000S.: 80.00...120.00

Mounting and assembly dimensions:

Designation K mm: -

KF	mm: K-OT
MS	mm: 0.6...1.0
XK	mm: 21.8...23.8
XL	mm: 11.2...14.6
Ya	mm: 37.2...39.2
Yb	mm: 53.1...60.9

Remarks:

⋮

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No. ..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R123-1
Type number : 0 460 424 007
Customer Part-No. : 390 7653

Customer-specific information
Customer : CDC

Engine : 4 BT 390

Power KW: 93
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 461 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 016

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 2.0
mm: $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 85.70...86.70
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 18.50...24.50
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1220
Del. quantity cm³/
1000S.: 19.50...25.50
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 97.00...147.00
mind 1000S.: 97.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 750
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump pressure bar: 3.80...4.40

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 900
Supply-pump pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Supply-pump pressure bar: 5.30...5.90
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1270
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
4th speed 1/min: 1200
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 15.00...55.00
(15.00...55.00)
5th speed 1/min: 1220
Shutoff
electromagnet Volt: 24

Del. quantity cm³/1000s.: 19.50...25.50
(16.50...28.50)
9th speed 1/min: 1100

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 80.50...83.50
(79.00...85.00)
11th speed 1/min: 750

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 85.80...89.80
(83.80...91.80)
12th speed 1/min: 900

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 85.70...86.70
(83.20...89.20)
20th speed 1/min: 600

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 83.00...91.00
(81.00...93.00)

Mech. shutoff:
Mech. Abst.:

1st speed 1/min: 1100
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 18.50...24.50
(16.50...26.50)

Dispersion cm³/1000s.: 5.5
(7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 0.00...4.00
(0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 97.00...147.00
1000S.: (100.00...150.00)

2nd speed 1/min: 200

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 97.00...147.00
1000S.: (97.00...147.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 1.4...1.6
SVS max.	mm: 3.9
XK	mm: 18.8...20.8
XL	mm: 13.2...16.6

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/12F1250R123-10
Type number : 0 460 424 019
Customer Part-No. : 390 7656

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9

Power KW: 116
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 016

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.7
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Setting value mm: 3.70...4.10
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 850
Setting value bar: 5.90...6.50
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1100
Del. quantity cm3/
1000S.: 90.50...91.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 22.00...28.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1340
Del. quantity cm3/
1000S.: 28.00...34.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 105.00...145.00
mind 1000S.: 105.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 4.60...5.40
mm: (4.30...5.70)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 850
TD travel mm: 3.70...4.10
mm: (3.20...4.60)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 500
TD travel mm: 1.60...2.40
mm: (1.30...2.70)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

2nd speed 1/min: 850
Supply-pump
pressure bar: 5.90...6.50

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Supply-pump
pressure bar: 6.70...7.30

Shutoff
electromagnet Volt: 24
4th speed 1/min: 500
Supply-pump
pressure bar: 4.30...4.90
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1340
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 28.00...34.00
1000S.: (25.00...37.00)
8th speed 1/min: 1290
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 68.00...76.00
1000S.: (66.00...78.00)
9th speed 1/min: 1250

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 84.50...87.50
1000S.: (83.00...89.00)
11th speed 1/min: 850

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 94.50...98.50
1000S.: (92.50...100.50)
12th speed 1/min: 1100

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 90.50...91.50
1000S.: (88.00...94.00)
20th speed 1/min: 500

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 82.00...90.00
1000S.: (80.00...92.00)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 1250
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 22.00...28.00
1000S.: (20.00...30.00)

Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 105.00...145.00
1000s.: (105.00...145.00)

2nd speed 1/min: 250
Shutoff

electromagnet Volt: 24
Del. quantity cm³/: 65.00...105.00
1000s.: (65.00...105.00)

4th speed 1/min: 100
Shutoff

electromagnet Volt: 24
Del. quantity cm³/: 105.00...145.00
1000s.: (105.00...145.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.6...1.0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
replaces : 16.07.91
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R230
Type number : 0 460 424 026
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT- 390 AUTOM.

Power KW: 77
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.66
mm: $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

D25

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 4.70...5.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 69.50...70.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 36.50...37.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1500
Charge press hPa: 1000

11

Del. quantity cm³/
1000S.: 44.00...50.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...120.00
mind 1000S.: 40.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.30...1.10
mm: (0.00...1.40)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

TD travel mm: 0.00...6.40
mm: (0.00...1.00)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 2.10...2.70
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1400
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1400
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.0
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.00...68.00
1000S.: (63.50...71.50)
2nd speed 1/min: 1650
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1500
Charge press. hPa: 1000

KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 54.00...60.00
 1000S.: (51.00...63.00)
 6th speed 1/min: 1590
 Charge press. hPa: 1000
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 9th speed 1/min: 1400
 Charge press. hPa: 1000
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 64.50...67.50
 1000S.: (63.00...69.00)
 12th speed 1/min: 900
 Charge press. hPa: 1000
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 69.50...70.50
 1000S.: (67.00...73.00)
 18th speed 1/min: 500
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 36.50...37.50
 1000S.: (33.00...41.00)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 73.50...81.50
 1000S.: -
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff electromagnet volt: 12
 KSB/AFB valve Volt: 12

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

KSB/AFB valve Volt: 12

Idle delivery:

1st speed 1/min: 375
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 8.00...14.00
 1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
 1000S.: (7.0)

2nd speed 1/min: 600

KSB/AFB valve Volt: 12

Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 KSB/AFB valve Volt: 12
 Timing valve Volt: 02
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 40.00...120.00
 1000S.: (40.00...120.00)

2nd speed 1/min: 380
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 0.00...40.00
 1000S.: (0.00...40.00)

4th speed 1/min: 100
 KSB/AFB valve Volt: 12
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 40.00...120.00
 1000S.: (40.00...120.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.9...1.2
SvS max.	mm: 3.8
LDA stroke	mm: 6.0
XK	mm: 18.8...20.8
XL	mm: 9.8...13.2
Ya	mm: 34.8...38.8
Yb	mm: 38.3...43.7

Remarks:

: C.D.C. # 390 8182

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines; only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 11.06.92
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R239
Type number : 0 460 424 030
Customer Part-No. : 391 1811

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 AUTO

Power KW: 88
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.95
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

E01

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 76.00...77.00

Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 56.00...57.00

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 10.00...12.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1360
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 60.00...66.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/
mind 1000S.: 70.00...140.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.60...3.40
mm: (2.30...3.70)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.00...3.60

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 4.60...5.20

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 24
4th speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 6.20...6.80

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1250

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 72.00...73.00
1000S.: (68.50...76.50)

2nd speed 1/min: 1550
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1510
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 0.00...15.00
1000S.: (0.00...15.00)

4th speed 1/min: 1470
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1360
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 60.00...66.00
1000S.: (57.00...69.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 73.50...76.50
1000S.: (72.00...78.00)

10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 75.50...78.50
1000S.: (73.50...80.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 76.00...77.00
1000S.: (73.50...79.50)

18th speed 1/min: 500

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 56.00...57.00
1000S.: (52.50...60.50)

20th speed 1/min: 500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 89.50...99.50
1000S.: -

Mech. shutoff:
Mech. Abstimmung:

1st speed 1/min: 1400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 10.00...12.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 90.00...160.00
1000S.: (90.00...160.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.00...90.00
1000S.: (50.00...90.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...140.00
1000S.: (70.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: K-OT
SVS max. mm: 2.0
Ya mm: 34.8...38.8
Yb mm: 38.0...43.4

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 15.06.92
replaces : 08.11.88
Calibrating oil : ISO-4113

Injection pump : VE4/12F1300R280
Type number : 0 460 424 037

Customer-specific information
Customer : PERKINS

Engine : T4.40 LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 950
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
Shutoff
electromagnet Volt: 12

E04

Supply-pump pressure

Speed 1/min: 950
Charge press hPa: 1000
Setting value bar: 4.60...5.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 93.00...94.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 84.50...85.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 22.00...26.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1430
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 47.00...53.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 95.00...145.00
mind 1000S.: 95.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

electromagnet Volt: 12
2nd speed 1/min: 950
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: 1.30...2.70

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 0.60...1.40
mm: 0.30...1.70

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump pressure bar: 6.00...6.60
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 950
Charge press. hPa: 1000
Supply-pump pressure bar: 1.80...2.20
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 850
Supply-pump pressure bar: 0.60...1.40
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.50...139.00
(55.50...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 7.0

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 89.00...90.00
(86.50...92.50)

2nd speed 1/min: 1560
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

3rd speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 14.00...22.00
(11.00...25.00)

4th speed 1/min: 1430
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 47.00...53.00
(44.00...56.00)

5th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 87.70...91.30
(86.50...92.50)

6th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 93.00...94.00
(90.50...96.50)

7th speed 1/min: 700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 84.50...85.50
(82.00...88.00)

8th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 92.00...96.00
(91.00...97.00)

9th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 75.50...79.50
(74.50...80.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...26.00
1000S.: (19.00...29.00)
Dispersion cm³/: 5.0
1000S.: (5.0)
2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...15.00
1000S.: (7.00...17.00)
3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.60
1000S.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 95.00...145.00
1000S.: (95.00...145.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.00...72.00
1000S.: (62.00...72.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 95.00...145.00
1000S.: (95.00...145.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: K-OT
MS mm: 1.1...1.5
Ya mm: 37.2...39.2

Yb mm: 47.2...55.6

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS
Edition : 10.06.92
replaces : 12.07.89
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R226-7
Type number : 0 460 424 046
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4 BT-390 580K

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.8
mm: $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 475
Del. quantity cm³/
1000S.: 6.00...12.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm³/
1000S.: 31.50...38.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900

TD travel mm: 2.30...2.70
 mm: (1.80...3.20)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 650
 TD travel mm: 0.70...1.50
 mm: (0.40...1.80)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Supply-pump pressure bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1180
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 10.00...40.00
 1000S.: (10.00...40.00)
 5th speed 1/min: 1160
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 31.50...38.50
 1000S.: (29.00...41.00)

Shutoff
 electromagnet Volt: 12
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 60.50...63.50
 1000S.: (59.00...65.00)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 60.80...63.80
 1000S.: (58.80...65.80)
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 63.50...64.50
 1000S.: (61.00...67.00)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 61.00...69.00
 1000S.: (59.00...71.00)
 Mech. shutoff:
 Mech. Abststellung:
 1st speed 1/min: 1100
 Del. quantity cm³/1000S.: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 475
 Del. quantity cm³/1000S.: 0.00...3.00
 1000S.: (0.00...3.00)
 Idle delivery:
 1st speed 1/min: 475
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 6.00...12.00
 1000S.: (4.00...14.00)
 Dispersion cm³/1000S.: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 550
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 0.00...4.00
 1000S.: (0.00...4.00)
 Shutoff
 electromagnet Volt: 12
 Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 70.00...130.00
1000s.: (70.00...130.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...70.00
1000s.: (30.00...70.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

MS mm: 1.1...1.5

SVS max. mm: 3.2

Ya mm: 34.8...38.8

Yb mm: 40.2...45.6

Remarks:

: CASE # 391 4487

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 11.06.92
replaces : 16.05.89
Calibrating oil : ISO-4113
Injection pump : VE4/12F1400R239-2
Type number : 0 460 424 051
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 AUTO

Power Kw: 88
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.95
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values

E10

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.20...2.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 86.00...87.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 58.50...59.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 4.00...6.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1480
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 61.50...67.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 70.00...140.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.80...3.60
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.20...3.80

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.70...6.30

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.30...6.90

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff
electromagnet Volt: 12
Overflow : 69.50...111.20
quantity cm³/10s: (69.50...111.20)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 83.40...180.70
quantity cm³/10s: (83.40...180.70)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 330
LDA-stroke mm: 7.2

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 72.00...73.00
1000S.: (68.50...76.50)

2nd speed 1/min: 1640
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1600
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)

4th speed 1/min: 1560
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1480
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 61.50...67.50
1000S.: (58.50...70.50)

9th speed 1/min: 1400
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 73.00...76.00
1000S.: (71.50...77.50)

10th speed 1/min: 1100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.00...82.00
1000S.: (77.00...84.00)

12th speed 1/min: 750
Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 86.00...87.00
 1000S.: (83.50...89.50)
 18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 58.50...59.50
 1000S.: (55.00...63.00)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 98.00...108.00
 1000S.: -

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.00...6.00
 1000S.: (0.00...10.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.00...150.00
 1000S.: (80.00...150.00)
 2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...80.00
 1000S.: (40.00...80.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...140.00
 1000S.: (70.00...140.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-0T
MS	mm: 1.0...1.4
SVS max.	mm: 2.2
LDA stroke	mm: 7.2
XK	mm: 21.8...23.8
XL	mm: 11.5...14.9
Ya	mm: 34.8...38.8
Yb	mm: 41.7...47.1

Remarks:

Overflow restriction 0.75 mm - Part No.
 ..343,..344 :

Operate control lever after each
 manifold-pressure compensator pressure
 change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 03.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R374
Type number : 0 460 424 057
Customer Part-No. : 391 7539

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 IND

Power KW: 93
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.55
mm: $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 101.00...102.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 84.50...85.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1130
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 61.00...67.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...130.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 4.90...5.70
mm: (4.60...6.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6.70...7.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350
LDA-stroke mm: 6.6
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 94.50...95.50
(91.00...99.00)

2nd speed 1/min: 1240
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...15.00
(0.00...15.00)

4th speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 15.00...55.00
(15.00...55.00)

5th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 90.00...93.00
(88.50...94.50)

9th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 110.50...120.50
(109.50...121.50)

10th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 84.50...85.50
(81.00...89.00)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 101.00...102.00
(98.50...104.50)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000s.: (6.00...16.00)
Dispersion cm³/: 5.5
1000s.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...140.00
1000s.: (70.00...140.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000s.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000s.: (60.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4
SVS max. mm: 2.4
LDA stroke mm: 6.6

Remarks:

⋮
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 03.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R373-2
Type number : 0 460 424 060
Customer Part-No. : 391 7030

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9 IND.

Power KW: 63
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.8
mm: ±0.02(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.00...2.40
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.60...5.20
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1100
Del. quantity cm³/
1000S.: 57.50...58.50
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 335
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
Del. quantity cm³/
1000S.: 40.00...46.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 2.90...3.70
mm: (2.60...4.00)
Shutoff
electromagnet Volt: 24

3rd speed 1/min: 900
TD travel mm: 2.00...2.40
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 24

4th speed 1/min: 750
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2.70...3.30

Shutoff
electromagnet Volt: 24

2nd speed 1/min: 900

Supply-pump pressure bar: 4.60...5.20

Shutoff
electromagnet Volt: 24

3rd speed 1/min: 1100

Supply-pump pressure bar: 5.40...6.00

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1370
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 0.00...15.00
(0.00...15.00)

4th speed 1/min: 1330
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 15.00...55.00
(15.00...55.00)

5th speed 1/min: 1300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 40.00...46.00
(37.00...49.00)

9th speed 1/min: 1250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 55.50...58.50
(54.00...60.00)

11th speed 1/min: 750
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 55.50...59.50
(53.50...61.50)

12th speed 1/min: 1100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 57.50...58.50
(55.00...61.00)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 49.00...57.00
(47.00...59.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1250
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 335
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 335
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 8.00...14.00
(6.00...16.00)

Dispersion cm³/1000S.: 5.5
(7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 0.00...4.00
(0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: 75.00...125.00
(75.00...125.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 0.9...1.1

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R374-1
Type number : 0 460 424 063
Customer Part-No. : 391 7020

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 IND.

Power KW: 84
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.55
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 84.50...85.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 77.50...80.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/
mind 1000S.: 60.00...130.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
Charge press hPa: 1000
TD travel mm: 5.20...6.00
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1150
Charge press. hPa: 1000
Supply-pump pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 1150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350
LDA-stroke mm: 6.6
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 84.50...85.50
(82.00...88.00)

2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

3rd speed 1/min: 1220
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 15.00...55.00
(15.00...55.00)

5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 63.00...69.00
(60.00...72.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 77.50...80.50
(76.00...82.00)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 79.50...82.50
(77.50...84.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 84.50...85.50
(82.00...88.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 63.50...64.50
(60.00...68.00)

Mech. shutoff:
Mech. Abst.:

1st speed 1/min: 1100

Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -

E21

KF mm: 5.0...5.4
MS mm: 1.0...1.4
LDA stroke mm: 6.6

Remarks:

:
:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1150R374-1
Type number : 0 460 424 063
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 IND.

Power KW: 112
Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.55
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values

E22

Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 84.50...85.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1220
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 62.50...68.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 60.00...130.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
Charge press hPa: 1000
TD travel mm: 5.20...6.00
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1150
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1150
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 6.6
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.50...80.50
1000S.: (76.00...84.00)

2nd speed 1/min: 1320
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1260
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1220
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.50...68.50
1000S.: (59.50...71.50)

9th speed 1/min: 1150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 76.00...79.00
1000S.: (74.50...80.50)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.50...82.50
1000S.: (77.50...84.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 85.50...86.50
1000S.: (83.00...89.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.50...64.50
1000S.: (60.00...68.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1150
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4
LDA stroke mm: 6.6

Remarks:

: C.D.C # 391 7519
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM
Edition : 16.06.92
Calibrating oil : ISO-4113
Injection pump : VE4/12F1400R477
Type number : 0 460 424 088
Customer-specific information
Customer : MWM
Engine : TD-229 EC4 F-1000 T

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder assembly : 1 688 901 022

Opening Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 800
Setting value mm: 2.80...3.20
Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 800
Setting value bar: 6.00...6.60
Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

E25

Speed 1/min: 1000
Charge press. hPa: 800
Del. quantity cm3/ 1000S.: 119.00...120.00

Shutoff electromagnet Volt: 12
Dispersion cm3/ 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/ 1000S.: 89.00...93.00

Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/ 1000S.: 17.00...21.00

Shutoff electromagnet Volt: 12
Del. quantity cm3/ 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1500
Charge press hPa: 800
Del. quantity cm3/ 1000S.: 95.00...101.00

Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/ 1000S.: 130.00...180.00
mind 1000S.: 130.0

Shutoff electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1300
Charge press hPa: 800
TD travel mm: 4.50...5.30
mm: (4.20...5.60)

electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press hPa: 800
TD travel mm: 2.80...3.20
mm: (2.30...3.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press hPa: 800
TD travel mm: 1.00...1.80
mm: (0.70...2.10)

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 800
Supply-pump pressure bar: 7.10...7.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 800
Supply-pump pressure bar: 6.00...6.60

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press. hPa: 800
Supply-pump pressure bar: 5.10...5.70

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 97.30...139.00
(82.30...154.00)

2nd speed 1/min: 1300
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 111.10...194.40
(96.00...209.40)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 109.00...113.00
(106.50...115.50)

2nd speed 1/min: 1650
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 36.00...52.00
(32.00...56.00)

3rd speed 1/min: 1500
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 95.00...101.00
(92.00...104.00)

4th speed 1/min: 1300
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 121.00...125.00
(119.50...126.50)

5th speed 1/min: 1000
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 119.00...120.00
(116.50...122.50)

6th speed 1/min: 800
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 121.00...127.00
(119.00...129.00)

7th speed 1/min: 500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 89.00...93.00
(86.50...95.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 17.00...21.00
(15.00...23.00)

Dispersion cm³/1000S.: 3.5
(5.0)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 8.00...16.00
(6.00...18.00)

3rd speed 1/min: 470
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...6.00
(0.00...6.00)

Automatic starting fuel delivery:

1st speed 1/min: 250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...100.00
1000S.: (50.00...100.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 130.00...180.00
1000S.: (130.00...180.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.6...3.8
KF mm: K-OT
Ya mm: 42.0...44.0
Yb mm: 33.8...42.2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM
Edition : 16.06.92
Calibrating oil : ISO-4113

Injection pump : VE4/12F1500P492
Type number : 0 460 424 091

Customer-specific information
Customer : MWM

Engine : D 229 EC 4

TEST BENCH REQUIREMENTS

Calibrating oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 4.20...4.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 6.20...6.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100

Del. quantity cm³/
1000s.: 84.50...85.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000s.: 13.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000s.: (5.0)

Full-load speed regulation

Speed 1/min: 1600
Del. quantity cm³/
1000s.: 54.00...60.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 100.00...140.00
mind 1000s.: 100.0
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1500
TD travel mm: 6.30...7.10
mm: (6.00...7.40)
Shutoff : 12
2nd speed 1/min: 1100
TD travel mm: 4.20...4.60
mm: (3.70...5.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
TD travel mm: 2.30...3.10
mm: (2.00...3.40)

Supply-pump pressure characteristic:

1st speed 1/min: 1500
Supply-pump
pressure bar: 7.80...8.40
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1100

Supply-pump
pressure bar: 6.20...6.80
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
Supply-pump
pressure bar: 5.40...6.00

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...42.00
1000S.: (25.00...45.00)
3rd speed 1/min: 1600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 54.00...60.00
1000S.: (51.00...63.00)
4th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 75.00...79.00
1000S.: (73.50...80.50)
5th speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 84.50...85.50
1000S.: (82.00...88.00)
6th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 88.00...92.00
1000S.: (86.50...93.50)
7th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 66.00...72.00
1000S.: (64.00...74.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375

F01

Del. quantity cm³/: 13.00...17.00
1000S.: (11.00...19.00)

Shutoff
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (11.00...19.00)
Dispersion cm³/: 3.5
1000S.: (5.0)
2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 38.50...46.50
1000S.: (36.50...48.50)
3rd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)
4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 100.00...140.00
1000S.: (100.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Ya mm: 42.0...44.0
Yb mm: 36.8...45.2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 01.06.92
replaces : 03.85
Calibrating oil : ISO-4113

Injection pump : VE6/12F1300L21-2
Type number : 0 460 426 013
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T6.354.4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.45
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 600
Charge press. hPa: 1000
Setting value mm: 2.50...2.90

Supply-pump pressure

Speed 1/min: 600
Charge press hPa: 1000
Setting value bar: 3.80...4.40

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 92.50...93.50
Dispersion cm³/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 68.50...72.50

Low-idle speed regulation

Speed 1/min: 270
Del. quantity cm³/
1000S.: 8.00...12.00
Del. quantity cm³/: 5.0
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1480
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 42.00...50.00

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 78.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 600
Charge press hPa: 1000
TD travel mm: 2.50...2.90
mm: (2.00...3.40)

4th speed 1/min: 400
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

5th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3.80...4.60
mm: (3.50...4.90)

Supply-pump pressure characteristic:

1st speed 1/min: 1300
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.00...6.60
 2nd speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.80...4.40
 3rd speed 1/min: 400
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.00...3.60

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow quantity cm3/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 Overflow quantity cm3/10s: 55.60...139.00
 (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
 Charge-air pressure-setting point hPa: 320
 LDA-stroke mm: 4.5
 Del. quantity cm3/1000s.: 84.50...88.50
 (82.80...90.20)
 2nd speed 1/min: 1600
 Charge press. hPa: 1000
 Del. quantity cm3/1000s.: 0.00...3.00
 (0.00...3.00)
 5th speed 1/min: 1480
 Charge press. hPa: 1000
 Del. quantity cm3/1000s.: 42.00...50.00
 (41.00...51.00)
 9th speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm3/1000s.: 85.50...88.50
 (84.00...90.00)
 12th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm3/1000s.: 92.50...93.50
 (90.00...96.00)
 16th speed 1/min: 1000
 Del. quantity cm3/1000s.: 78.50...82.50
 (77.50...83.50)
 18th speed 1/min: 500
 Del. quantity cm3/1000s.: 68.50...72.50
 (67.50...73.50)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1300
 Del. quantity cm3/1000s.: 0.00...3.00
 (0.00...3.00)

Idle delivery:

1st speed 1/min: 270
 Del. quantity cm3/1000s.: 8.00...12.00
 (5.00...15.00)
 Dispersion cm3/1000s.: 3.5
 -
 2nd speed 1/min: 400
 Del. quantity cm3/1000s.: 0.00...1.00
 (0.00...1.00)
 3rd speed 1/min: 320
 Del. quantity cm3/1000s.: 1.00...
 -

Automatic starting fuel delivery:

1st speed 1/min: 130
 Del. quantity cm3/1000s.: 78.00...
 -
 2nd speed 1/min: 230
 Del. quantity cm3/1000s.: ...75.00
 -
 4th speed 1/min: 100
 Del. quantity cm3/1000s.: 78.00...
 -

Mounting and assembly dimensions:

KF mm: 5.1-5.4
 MS mm: 0.9-1.1
 SVS max. mm: 6.0
 XK mm: 20.2-22.2
 XL mm: 12.5-15.8
 Ya mm: 37.2-39.2
 Yb mm: 52.7-60.7

Remarks:

:
 :

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
 Edition : 03.06.92
 replaces : 02.84
 Calibrating oil : ISO4113

Injection pump : VE6/12F140CR132
 Type number : 0 460 426 032

Customer-specific information
 Customer : MAN

Engine : D 0226 MKF LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): ±0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 800
 Charge press. hPa: 1000
 Setting value mm: 3.10...3.50

Supply-pump pressure

Speed 1/min: 800
 Charge press hPa: 1000
 Setting value bar: 5.10...5.70

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 117.50...118.50
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 630
 Del. quantity cm³/
 1000S.: 73.50...74.50

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 10.00...16.00
 Del. quantity cm³/: 3.5
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1450
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 97.00...103.00

Start:

Speed 1/min: 100
 Charge press hPa: -
 Del. quantity cm³/: 70.00...130.00
 mind 1000S.: 70.00

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 800
 Inj.-qty. cm³/
 difference 1000S.: 2.00...8.00
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 800
 Supply pump
 pressure
 difference bar: -0.60...-0.20

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
 Charge press hPa: 1000
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)
 2nd speed 1/min: 800

Charge press hPa: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 4.20...5.00
mm: (3.90...5.30)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.80...4.40
2nd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 5.10...5.70
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6.10...6.70

Overflow quantity at overflow valve:

1st speed 1/min: 630
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Overflow : 55.50...138.90
quantity cm³/10s: (55.50...138.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 630
Charge-air pressure-setting point hPa: 400
LDA-stroke mm: 7.5
Del. quantity cm³/: 97.50...98.50
1000S.: (95.50...100.50)
2nd speed 1/min: 1650
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1610
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1560
Charge press. hPa: 1000
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1450
Charge press. hPa: 1000
Del. quantity cm³/: 97.00...103.00
1000S.: (95.50...104.50)
6th speed 1/min: 1400
Charge press. hPa: 1000

Del. quantity cm³/: 110.50...115.50
1000S.: (109.00...117.00)
7th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/: 117.50...118.50
1000S.: (115.50...120.50)
8th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/: 118.50...123.50
1000S.: (117.00...125.00)
9th speed 1/min: 630
Charge press. hPa: 1000
Del. quantity cm³/: 117.50...122.50
1000S.: (116.00...124.00)
10th speed 1/min: 630
Del. quantity cm³/: 73.50...74.50
1000S.: (71.50...76.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 10.00...16.00
1000S.: (8.00...18.00)
Dispersion cm³/: 3.5
1000S.: (4.0)
2nd speed 1/min: 350
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)
3rd speed 1/min: 400
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 800
Inj.-qty. cm³/ : -33.0...-31.0
difference 1000S.: (-33.0...-31.0)
2nd speed 1/min: 800
Inj.-qty. cm³/: 2.00...8.00
difference 1000S.: (2.00...8.00)

SP press.-dif.measurement:

pompa di mandata (FP):
1st speed 1/min: 800
Supply pump- pressure : -0.30...-0.10
difference bar: (-0.30...-0.10)
2nd speed 1/min: 800
Supply pump- pressure : -0.60...-0.20
difference bar: (-0.60...-0.20)

Automatic starting fuel delivery:

1st speed 1/min: 320
Del. quantity cm³/: 80.00...120.00
1000S.: (80.00...120.00)

2nd speed 1/min: 430
Del. quantity cm³/: 70.00...90.00
1000S.: (70.00...90.00)

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.7...6.0
MS	mm: 1.0...1.25
SVS max.	mm: 2.8
XK	mm: 25.0...27.0
XL	mm: 12.9...16.2
Ya	mm: 37.4...40.4
Yb	mm: 46.2...51.6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R159-4
Type number : 0 460 426 044
Customer Part-No. : 390 7665

Customer-specific information
Customer : CDC

Engine : 6BT-5.9 IND.

Power KW: 142
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 016

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.5
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

F07

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.60...4.00
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 83.00...84.00

Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 22.00...28.00

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1125
Del. quantity cm³/
1000S.: 37.00...43.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 100.00...140.00
mind 1000S.: 100.0

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 900
TD travel mm: 4.60...5.40
mm: (4.30...5.70)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 750
TD travel mm: 3.60...4.00
mm: (3.10...4.50)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 500
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3.00...3.60

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 750
Supply-pump
pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
Supply-pump
pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 1050
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1175
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1125
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 37.00...43.00
1000S.: (34.00...46.00)

9th speed 1/min: 1050
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 78.50...81.50
1000S.: (77.00...83.00)

Shutoff
electromagnet Volt: 24
Shutoff

electromagnet Volt: 24
12th speed 1/min: 900
Shutoff

electromagnet Volt: 24
Del. quantity cm³/: 83.00...84.00
1000S.: (80.50...86.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 82.00...90.00
1000S.: (80.00...92.00)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 1050
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 22.00...28.00
1000S.: (20.00...30.00)
Dispersion cm³/: 5.5
1000S.: (7.0)

Shutoff
electromagnet Volt: 24
Shutoff

electromagnet Volt: 24
4th speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 100.00...150.00
1000S.: (100.00...150.00)

2nd speed 1/min: 200
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 100.00...140.00
1000S.: (100.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.3...1.7

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 03.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F125CR232-1
Type number : 0 460 426 078
Customer Part-No. : 391 0679

Customer-specific information
Customer : CDC

Engine : 6 BT-5.9

Power KW: 1250

TEST BENCH REQUIREMENTS

Overflow restrictor: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.1
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 3.90...4.30
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 700
Charge press hPa: 1000
Setting value bar: 2.80...3.40
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 66.00...67.00

Shutoff
electromagnet Volt: 24
Dispersion cm³/
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 30.50...31.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 360
Del. quantity cm³/
1000S.: 8.00...14.00

Shutoff
electromagnet Volt: 24
Del. quantity cm³/
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1330
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 50.50...56.50

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/
mind 1000S.: 45.00...145.00
1000S.: 45.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 5.30...6.10
mm: (5.00...6.40)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 3.90...4.30
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 700
Charge press hPa: 1000
TD travel mm: 1.60...2.40
mm: (1.30...2.70)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

2nd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 2.80...3.40

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.70...4.30

Shutoff
electromagnet Volt: 24
4th speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24

Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 500
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 60.00...61.00
(56.50...64.50)

2nd speed 1/min: 1550
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

4th speed 1/min: 1430
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 15.00...55.00
(15.00...55.00)

5th speed 1/min: 1330
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 50.50...56.50
(47.50...59.50)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 63.50...66.50
(62.00...68.00)

11th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 64.00...67.00
(61.50...69.50)

12th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 66.00...67.00
(63.50...69.50)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 30.50...31.50
(27.00...35.00)

Mech. shutoff:
Mech. Abst. ellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 360
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 360
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 55.00...115.00
1000S.: (55.00...115.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 55.00...95.00
1000S.: (55.00...95.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...145.00
1000S.: (45.00...145.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

F12

K mm: -
KF mm: 5.0...5.4
MS mm: 1.1...1.5
LDA stroke mm: 7.0

Remarks:

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
 Edition : 11.06.92
 replaces : 06.11.89
 Calibrating oil : ISO-4113

 Injection pump : VE6/12F1300R240
 Type number : 0 460 426 084
 Customer Part-No. :

Customer-specific information
 Customer : PERKINS

Engine : T6 60 cc Truck

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172.00...175.00

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.25
 (from BDC): 0.02(0.04)

Start of delivery block
 Piston stroke mm: 1.0
 mm: ±0.02

Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1000
 Setting value mm: 1.30...1.70
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100
 Charge press hPa: 1000
 Setting value bar: 6.50...7.10
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
 Charge press. hPa: 1000
 Del. quantity cm3/
 1000S.: 97.50...98.50

Shutoff
 electromagnet Volt: 24
 Dispersion cm3/
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
 Del. quantity cm3/
 1000S.: 85.00...86.00

Shutoff
 electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm3/
 1000S.: 16.50...20.50

Shutoff
 electromagnet Volt: 24
 Del. quantity cm3/
 1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1450
 Charge press hPa: 1000
 Del. quantity cm3/
 1000S.: 47.00...53.00

Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm3/: 115.00...155.00
 mind 1000S.: 115.0

Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.30...7.90
Shutoff

electromagnet Volt: 24
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.50...7.10
Shutoff

electromagnet Volt: 24
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.90...4.50
Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.3
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 94.00...95.00
1000s.: (91.00...98.00)

2nd speed 1/min: 1520
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.50...21.50
1000s.: (10.50...24.50)

3rd speed 1/min: 1580
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...7.00
1000s.: (0.00...7.00)

5th speed 1/min: 1450
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 47.00...53.00
1000s.: (44.00...56.00)

9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 94.00...97.00
1000s.: (92.00...99.00)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 93.00...96.00
1000s.: -

12th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 98.50...99.50
1000s.: (96.00...102.00)

18th speed 1/min: 700
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 86.50...87.50
1000s.: (84.00...90.00)

21th speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 81.00...85.00
1000s.: -

Mech. shutoff:

Mech. Abst.ellung:

1st speed 1/min: 1300
Del. quantity cm3/: 0.00...3.00
1000s.: (0.00... 3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm3/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 16.50...20.50
1000s.: (13.50...23.50)

Dispersion cm3/: 5.0
1000s.: (5.0)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 4.50...10.50
1000s.: (2.50...12.50)

4th speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 0.00...2.60
1000s.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 120.00...160.00
1000s.: (95.00...135.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 35.00...85.00
1000s.: (35.00...85.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 120.00...160.00
1000s.: (115.00...155.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation	
K	mm: -
KF	mm: K-0T
MS	mm: 0.6...1.0
SVS max.	mm: 3.2
LDA stroke	mm: 6.3
XK	mm: 17.0...19.0
XL	mm: 12.8...16.2
Ya	mm: 37.2...39.2
Yb	mm: 50.6...58.8

Remarks:

:
:
:
Overflow restriction 0.55 mm - Part No. ..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 11.06.92
replaces : 15.07.91
Calibrating oil : ISO-4113
Injection pump : VE6/12F1300R241
Type number : 0 460 426 085
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T6 60

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.10...2.50

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 7.20...7.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 92.00...93.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.5
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 77.50...80.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 52.00...58.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 90.00...130.00
mind 1000S.: 90.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 950
Charge press hPa: 1000
TD travel mm: 0.50...1.10
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump pressure bar: 8.00...8.60
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 7.20...7.80
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump pressure bar: 5.50...6.10
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350
LDA-stroke mm: 6.1
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 84.50...85.50
1000S.: (81.50...88.50)

2nd speed 1/min: 1530
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1480
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...24.00
1000S.: (6.00...26.00)

5th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...58.00
1000S.: (49.00...61.00)

9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 83.00...86.00
1000S.: (81.00...88.00)

10th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 89.50...92.50
1000S.: (87.50...94.50)

12th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 92.00...93.00
1000S.: (89.50...95.50)

18th speed 1/min: 700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 77.50...80.50
1000S.: (76.00...82.00)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 71.50...74.50
1000S.: (69.50...76.50)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1300

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.5
1000S.: (4.0)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.00...10.00
1000S.: (2.00...12.00)

4th speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 100.00...140.00
1000S.: (100.00...140.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...130.00
1000S.: (90.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

F18

K	mm: -
KF	mm: K-OT
MS	mm: 1.1...1.3
SVS max.	mm: 6.0
LDA stroke	mm: 6.1
XK	mm: 20.0...22.0
XL	mm: 10.5...13.9
Ya	mm: 37.2...39.2
Yb	mm: 44.9...53.5

Remarks:
Overflow restriction 0.55 mm - Part No.
..303 :

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 09.06.92
 replaces : 14.07.88
 Calibrating oil : ISO-4113

 Injection pump : VE6/12F1000R225-15
 Type number : 0 460 426 093
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.3
 (from BDC): +0.02(0.04)

Indicator setting
 Piston stroke mm: 1.5
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750

F19

Setting value mm: 3.50...3.90
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
 Del. quantity cm3/
 1000S.: 72.00...73.00

Shutoff
 electromagnet Volt: 24
 Dispersion cm3/
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm3/
 1000S.: 8.00...14.00

Shutoff
 electromagnet Volt: 24
 Del. quantity cm3/
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1040
 Del. quantity cm3/
 1000S.: 53.50...59.50

Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
 Del. quantity cm3/
 mind 1000S.: 60.00

Shutoff
 electromagnet Volt: 24

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000
 TD travel mm: 4.60...5.40
 mm: (4.30...5.70)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 750
 TD travel mm: 3.50...3.90
 mm: (3.00...4.40)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 500
TD travel mm: 1.40...2.20
mm: (1.10...2.50)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2.40...3.00
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 750
Supply-pump pressure bar: 3.50...4.10
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Supply-pump pressure bar: 4.60...5.20
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1120
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (0.00...3.00)
3rd speed 1/min: 1100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (0.00...15.00)
5th speed 1/min: 1040
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (50.50...62.50)
8th speed 1/min: 1060
Shutoff
electromagnet Volt: 24

Del. quantity cm³/1000S.: (15.00...45.00)

9th speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (67.00...73.00)

11th speed 1/min: 750
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (69.50...77.50)

12th speed 1/min: 900
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (69.50...75.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (55.00...67.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1000
Del. quantity cm³/1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (6.00...16.00)

Dispersion cm³/1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000S.: (60.00...120.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 30.00...60.00
1000S.: (30.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.8...1.2
SVS max.	mm: 1.2
XK	mm: 18.8...20.8
XL	mm: 11.7...15.1
Ya	mm: 34.8...38.8
Yb	mm: 42.2...47.8

Remarks:
: C.D.C. # 391 2561
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 11.06.92
replaces : 06.11.89
Calibrating oil : ISO-4113
Injection pump : VE6/12F1300R240-2
Type number : O 460 426 094
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T6 60 cc Truck

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.25
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.0
mm: ±0.02

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.30...1.70

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 6.50...7.10

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000s.: 99.00...100.00
Dispersion cm3/: 5.0
1000s.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000s.: 87.00...88.00

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000s.: 16.50...20.50
Del. quantity cm3/: 5.0
1000s.: (5.0)

Full-load speed regulation

Speed 1/min: 1450
Charge press hPa: 1000
Del. quantity cm3/
1000s.: 47.00...53.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 120.00...160.00
mind 1000s.: 120.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

4th speed 1/min: 1000

Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump pressure bar: 7.30...7.90
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6.50...7.10
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.90...4.50

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 400
LDA-stroke mm: 6.3
Del. quantity cm³/1000S.: 95.00...96.00
(92.50...98.50)
2nd speed 1/min: 1520
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 13.50...21.50
(10.50...24.50)
3rd speed 1/min: 1580
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...7.00
(0.00...7.00)
5th speed 1/min: 1450
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 47.00...53.00
(44.00...56.00)
9th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 95.00...98.00
(93.50...99.50)
10th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 99.50...102.50
(98.00...104.00)
12th speed 1/min: 700
Charge press. hPa: 1000

Del. quantity cm³/1000S.: 99.00...100.00
(96.50...102.50)
18th speed 1/min: 700
Del. quantity cm³/1000S.: 87.00...88.00
(84.50...90.50)
20th speed 1/min: 500
Del. quantity cm³/1000S.: 80.00...83.00
(78.50...84.50)

Mech. shutoff:
Mech. Abst.:

1st speed 1/min: 1300
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/1000S.: 16.50...20.50
(13.50...23.50)
Dispersion cm³/1000S.: 5.0
(5.0)
2nd speed 1/min: 350
Del. quantity cm³/1000S.: 4.50...10.50
(2.50...12.50)
4th speed 1/min: 400
Del. quantity cm³/1000S.: 0.00...2.60
(0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm³/1000S.: 120.00...160.00
(95.00...135.00)
2nd speed 1/min: 230
Del. quantity cm³/1000S.: 35.00...85.00
(35.00...85.00)
4th speed 1/min: 100
Del. quantity cm³/1000S.: 120.00...160.00
(120.00...160.00)

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: K-OT
MS mm: 0.6...1.0
XK mm: 17.0...19.0
XL mm: 12.8...16.2
Ya mm: 37.2...39.2
Yb mm: 50.6...58.8

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 05.06.92
replaces : 09.11.88
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R173-8
Type number : 0 460 426 101
Customer Part-No. :

Customer-specific information
Customer : CUMMINS/GB

Engine : 6 BTA-590

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.85
mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 1.40...1.80

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 3.20...3.80

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 82.00...83.00
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 40.00...41.00

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 4.00...8.00
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 65.00...71.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
mind 1000S.: 70.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
Charge press hPa: 1000
TD travel mm: 2.30...3.10
mm: (2.00...3.40)

3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 1.40...1.80
mm: (0.90...2.30)

4th speed 1/min: 600

Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2.10...2.70
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 3.20...3.80
3rd speed 1/min: 1050
Charge press. hPa: 1000
Supply-pump pressure bar: 4.30...4.90

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 1250
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
LDA-stroke mm: 7.0
Del. quantity cm³/1000s.: 67.00...68.00
1000s.: (63.00...72.00)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 1330
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 15.50...55.50
1000s.: (15.50...55.50)
5th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 65.00...71.00
1000s.: (62.00...74.00)
9th speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 73.50...76.50
1000s.: (72.00...78.00)
10th speed 1/min: 1050
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 78.00...81.00
1000s.: (76.50...82.50)
12th speed 1/min: 750
Charge press. hPa: 1000

Del. quynity cm³/1000s.: 82.00...83.00
1000s.: (79.50...85.50)
18th speed 1/min: 500
Del. quantity cm³/1000s.: 40.00...41.00
1000s.: (36.00...45.00)
20th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 82.00...90.00

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1250
Del. quantity cm³/1000s.: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/1000s.: 4.00...8.00
1000s.: (1.00...11.00)
Dispersion cm³/1000s.: 5.5
1000s.: (7.0)
2nd speed 1/min: 500
Del. quantity cm³/1000s.: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/1000s.: 60.00...110.00
1000s.: (60.00...110.00)

2nd speed 1/min: 370
Del. quantity cm³/1000s.: 20.00...60.00
1000s.: (20.00...60.00)

4th speed 1/min: 100
Del. quantity cm³/1000s.: 70.00...120.00
1000s.: (70.00...120.00)

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 1.2...1.6
SVS max.	mm: 2.2
XK	mm: 18.8...20.8
XL	mm: 12.9...16.3
Ya	mm: 34.8...38.8
Yb	mm: 42.7...48.1

Remarks:

: C.D.C. # 3 278 482
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 05.06.92
replaces : 11.07.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R173-9
Type number : 0 460 426 102
Customer Part-No. :

Customer-specific information
Customer : CUMMINS/US

Engine : 6 BTA-590IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.85
mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 1.30...1.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 3.20...3.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 84.50...85.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 68.50...69.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 59.00...65.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
Charge press hPa: 1000
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2.20...2.80

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 3.20...3.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1050
Charge press. hPa: 1000
Supply-pump pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 77.50...78.50
(74.00...82.00)

2nd speed 1/min: 1400
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

3rd speed 1/min: 1330
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 15.00...55.00
(15.00...55.00)

5th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 59.00...65.00
(56.00...68.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 76.00...79.00
(74.50...80.50)

10th speed 1/min: 1050
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 80.50...83.50
(78.50...85.50)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 84.50...85.50
(82.00...88.00)

18th speed 1/min: 500
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 68.50...69.50
(65.00...73.00)

20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 84.00...92.00

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 1250
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 48.00...88.00
1000S.: (48.00...88.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4
SVS max. mm: 2.0
XK mm: 18.8...20.8
XL mm: 13.8...17.2
Ya mm: 34.8...38.8

Yb mm: 44.2...49.6

Remarks:

: C.D.C. # 390 8219

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 15.06.92
 replaces : 16.05.89
 Calibrating oil : ISO-4113

 Injection pump : VE6/12F1250R278
 Type number : 0 460 426 103
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6 BT- 590A CHRYSLER

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery block
 Piston stroke mm: 1.4
 mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
 Charge press. hPa: 1200
 Setting value mm: 1.30...1.70

AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
 Charge press hPa: 1200
 Setting value bar: 6.80...7.40

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100
 Charge press. hPa: 1200
 Del. quantity cm³/
 1000S.: 73.00...74.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 51.00...52.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/
 1000S.: (9.0)

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 5.50...9.50

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1340
 Charge press hPa: 1200
 Del. quantity cm³/
 1000S.: 52.50...58.50

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...160.00
mind 1000S.: 60.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1200
TD travel mm: 2.20...3.00
mm: (1.90...3.30)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1200
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 1200
TD travel mm: 0.50...1.30
mm: (0.20...1.60)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
8th speed 1/min: 450
TD travel mm: 3.00...4.00
mm: -

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1200
Supply-pump
pressure bar: 4.10...4.70

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1100
Charge press. hPa: 1200
Supply-pump
pressure bar: 6.80...7.40

KSB/AFB
valve Volt: 12

G02

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press. hPa: 1200
Supply-pump
pressure bar: 7.50...8.10
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1250
Charge press. hPa: 1200
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 700
LDA-stroke mm: 6.2

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 68.00...69.00
1000S.: (64.50...72.50)

2nd speed 1/min: 1550
Charge press. hPa: 1200

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

4th speed 1/min: 1410
Charge press. hPa: 1200

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1340
Charge press. hPa: 1200

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.50...58.50
 1000S.: (49.50...61.50)
 9th speed 1/min: 1250
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.00...72.00
 1000S.: (67.50...73.50)
 10th speed 1/min: 750
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 72.00...77.00
 1000S.: (70.00...79.00)
 12th speed 1/min: 1100
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 73.00...74.00
 1000S.: (70.50...76.50)
 18th speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.00...52.00
 1000S.: (47.50...55.50)
 20th speed 1/min: 500
 Charge press. hPa: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 78.00...90.00
 1000S.: -

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12
 KSB/AFB
 valve Volt: 12

Electr. shutoff:

1st speed 1/min: 350

G03

Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

KSB/AFB
 valve Volt: 12

Idle delivery:

1st speed 1/min: 350

KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 5.50...9.50
 1000S.: (2.50...12.50)

Dispersion cm³/: 5.5
 1000S.: (7.0)

2nd speed 1/min: 450

KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

3rd speed 1/min: 300

KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.50...16.50
 1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

KSB/AFB
 valve Volt: 12

Timing valve Volt: 12
 Shutoff

electromagnet Volt: 12
 Del. quantity cm³/: 60.00...160.00
 1000S.: (60.00...160.00)

2nd speed 1/min: 250

KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.00...50.00
 1000S.: (30.00...50.00)

4th speed 1/min: 100

KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 60.00...160.00
 1000S.: (60.00...160.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.7
KF	mm: K-OT
MS	mm: 1.0...1.4
SVS max.	mm: 1.4
LDA stroke	mm: 6.2
XK	mm: 18.8...20.8
XL	mm: 12.5...15.9
Ya	mm: 34.8...38.8
Yb	mm: 42.1...47.7

Remarks:

: C.D.C. # 391 0769

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
 Edition : 15.06.92
 replaces : 09.11.88
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1100R296
 Type number : 0 460 426 105
 Customer Part-No. :

Customer-specific information

Customer : CDC
 Engine : 6 BT- 590 I TRAKTOR

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C
 with thermometer : 40...48
 Electronically : 42...50
 Inlet press., bar : 0.30...0.40
 Calibrating nozzle-holder assembly : 1 688 901 027
 Opening Pressure bar: 250.00...253.00
 Perforated-plate diameter mm: 0.5
 Test inj. tubing : 1 680 750 017
 Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840
 Start of delivery Prestroke mm: 0.3
 (from BDC): $\pm 0.02(0.04)$
 Start of delivery block Piston stroke mm: 1.5
 mm: $\pm 0.02(0.06)$
 Outlet : D
 Injection-pump setting values
 Test specifications in parentheses
 Timing-device travel

Speed 1/min: 750
 Charge press. hPa: 1000
 Setting value mm: 3.10...3.50
 Shutoff electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Charge press hPa: 1000
 Setting value bar: 4.10...4.70
 Shutoff electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 82.50...83.50

Shutoff electromagnet Volt: 12
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/1000S.: 39.00...40.00

Shutoff electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm³/1000S.: 4.00...10.00

Shutoff electromagnet Volt: 12
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
 Charge press hPa: 1000
 Del. quantity cm³/1000S.: 50.00...56.00

Shutoff electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 65.00...105.00
 mind 1000S.: 65.00

Shutoff electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 5.10...5.90
mm: (4.80...6.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.00...1.80
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.00...3.60
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 4.10...4.70
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

G06

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 400
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 76.50...77.50
(73.00...81.00)

2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

3rd speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 15.00...55.00
(15.00...55.00)

5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 50.00...56.00
(47.00...59.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 66.50...69.50
(65.00...71.00)

10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 72.00...75.00
(70.00...77.00)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 82.50...83.50
(80.00...86.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 39.00...40.00
(35.50...43.50)

20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 82.00...90.00
-

Mech. shutoff:
Mech. Abstelligung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.00...10.00
1000S.: (2.00...12.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 280
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...105.00
1000S.: (55.00...105.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.3...1.7
SVS max. mm: 1.8

XK mm: 18.8...20.8
XL mm: 10.4...13.8
Ya mm: 34.8...38.8
Yb mm: 39.2...44.8

Remarks:

: C.D.C. # 391 2115

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
replaces : 01.02.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R232-2
Type number : 0 460 426 111
Customer Part-No. :

Customer-specific information
Customer : CUMMINS/GB

Engine : 6 BT-5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.06)$

Start of delivery block
Piston stroke mm: 1.6
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 7.40...8.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 67.50...68.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 56.50...57.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 9.0
1000S.: (9.0)

Low-idle speed regulation

Speed 1/min: 340
Del. quantity cm³/
1000S.: 10.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 44.50...50.50

Start:

Speed 1/min: 100
Del. quantity cm³/: 65.00...125.00
mind 1000S.: 65.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.40...3.20
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 7.10...7.70
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 7.40...8.00
Shutoff

electromagnet Volt: 12
4th speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 7.90...8.50
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 400
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 66.50...67.50
1000S.: (63.00...71.00)

2nd speed 1/min: 1280
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1230
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...15.00
1000S.: (0.00...15.00)

4th speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 44.50...50.50
1000S.: (41.50...53.50)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 64.50...67.50
1000S.: (63.00...69.00)

11th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 68.50...72.50
1000S.: (66.50...74.50)

12th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 67.50...68.50
1000S.: (65.00...71.00)

18th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 56.50...57.50
1000S.: (53.00...61.00)

20th speed 1/min: 600
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 72.50...82.50
1000S.: -

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 340
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 340
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...12.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 65.00...125.00
1000S.: (65.00...125.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 1.3...1.7
SVS max.	mm: 1.0
LDA stroke	mm: 7.0
XK	mm: 21.8...23.8
XL	mm: 11.7...15.1
Ya	mm: 34.8...38.8
Yb	mm: 40.8...46.2

Remarks:

: C.D.C. # 391 0712
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 16.06.92
replaces : 09.11.88
Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R307
Type number : 0 460 426 112
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 TF LKW,BUS

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

G11

Charge press. hPa: 1000
Setting value mm: 2.80...3.20

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 8.10...8.70

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 120.50...121.50
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 88.50...89.50

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 26.50...33.50
Del. quantity cm³/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1350
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 107.00...113.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...130.00
mind 1000S.: 70.00

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm³/
difference 1000S.: 39.50...47.50#
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
Charge press hPa: 1000
TD-travel
difference mm: 0.80...1.00#
SP press.-dif.measurement
pompa di mandata (FP)

1. Speed 1/min: 1000
Charge press hPa: 1000
Supply pump
pressure
difference bar: 0.10...0.30*

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 3.50...4.30
mm: (3.20...4.60)
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.80...3.20
mm: (2.30...3.70)
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.50...2.30
mm: (1.20...2.60)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.80...6.40
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.10...8.70
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.50...9.10

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
Charge-air pressure-setting
point hPa: 300
Del. quantity cm³/: 104.50...105.50
1000S.: (102.50...107.50)
2nd speed 1/min: 1520
Charge press. hPa: 1000

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1480
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)

4th speed 1/min: 1430
Charge press. hPa: 1000
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/: 107.00...113.00
1000S.: (105.50...114.50)

9th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/: 116.50...121.50
1000S.: (115.00...123.00)

12th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/: 120.50...121.50
1000S.: (118.50...123.50)

15th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/: 120.50...125.50
1000S.: (119.00...127.00)

18th speed 1/min: 600
Del. quantity cm³/: 88.50...89.50
1000S.: (86.50...91.50)

20th speed 1/min: 600
Charge press. hPa: 1000
Del. quantity cm³/: 118.50...127.50
1000S.: (117.00...129.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 26.50...33.50
1000S.: (24.50...35.50)

Dispersion cm³/: 3.5
1000S.: (4.0)

2nd speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 350
Del. quantity cm³/: 3.00...12.00
1000S.: (1.50...13.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

2nd speed 1/min: 1000
Charge press. hPa: 1000

Inj.-qty. cm3/: 11.00..13.00*
difference 1000S.: (11.00...13.00)
4th speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm3/: 39.50..47.50#
difference 1000S.: (39.50...47.50)
5th speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm3/: 2.00...8.00'
difference 1000S.: (2.00...8.00)
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 0.80...1.00#
difference mm: (0.80...1.00)
4th speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : 0.10...0.90'
difference mm: (0.10...0.90)
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.10...0.30)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm3/: 95.00...135.00
1000S.: (95.00...135.00)

2nd speed 1/min: 450
Del. quantity cm3/: 55.00...95.00
1000S.: (55.00...95.00)

4th speed 1/min: 100
Del. quantity cm3/: 70.00...130.00
1000S.: (70.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

MS mm: 0.6...1.0
SVS max. mm: 0.6
Ya mm: 37.4...40.4
Yb mm: 46.4...51.6

Remarks:

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
replaces : 13.07.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R225-17
Type number : 0 460 426 118
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.5
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 4.20...4.60
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 67.00...68.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 11.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
Del. quantity cm³/
1000S.: 44.30...50.30

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...150.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.50...6.30
mm: (5.20...6.60)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
TD travel mm: 4.20...4.60
mm: (3.70...5.10)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 750
 TD travel mm: 2.90...3.70
 mm: (2.60...4.00)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 2.90...3.50
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 900
 Supply-pump pressure bar: 4.70...5.30
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 5.50...6.10
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 750
 Supply-pump pressure bar: 4.00...4.60
 Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1240
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 0.00...3.00
 (0.00...3.00)
 3rd speed 1/min: 1220
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 0.00...15.00
 (0.00...15.00)
 4th speed 1/min: 1180
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/1000S.: 0.00...40.00
 (0.00...40.00)
 5th speed 1/min: 1150
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 44.30...50.30
 (41.30...53.30)
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 64.50...67.50
 (63.00...69.00)
 11th speed 1/min: 750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 82.00...87.00
 (81.00...89.00)
 12th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 67.00...68.00
 (64.50...70.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 85.50...93.50
 (83.50...95.50)

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 1100
 Del. quantity cm³/1000S.: 0.00...3.00
 (0.00...3.00)
 Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/1000S.: 0.00...3.00
 (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 11.00...13.00
 (7.00...17.00)
 Dispersion cm³/1000S.: 5.5
 (7.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/1000S.: 0.00...4.00
 (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 80.00...160.00
1000S.: (80.00...160.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...100.00
1000S.: (70.00...100.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...150.00
1000S.: (70.00...150.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 1.3...1.7
SVS max.	mm: 2.2
XK	mm: 18.8...20.8
XL	mm: 10.9...14.3
Ya	mm: 34.8...38.8
Yb	mm: 41.6...47.0

Remarks:
: C.D.C. # 391 2126
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 05.06.92
replaces : 11.07.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R173-12
Type number : 0 460 426 126
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTA-590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.85
mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 1.30...1.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 3.20...3.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 83.00...84.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 67.50...68.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 9.0
1000S.: (9.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 9.00...13.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 60.00...66.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 80.00...140.00
mind 1000S.: 80.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.20...3.00
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 2.60...3.20
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.20...3.80
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 77.50...78.50
1000S.: (73.50...82.50)

2nd speed 1/min: 1260
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...66.00
1000S.: (57.00...69.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 78.50...81.50
1000S.: (77.00...83.00)

10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.50...83.50
1000S.: (79.00...85.00)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 83.00...84.00
1000S.: (80.50...86.50)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.50...68.50
1000S.: (63.50...72.50)

20th speed 1/min: 500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 81.00...89.00
1000S.: -

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 280
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...140.00
1000S.: (80.00...140.00)

2nd speed 1/min: 440
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...80.00
1000S.: (50.00...80.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...140.00
1000S.: (80.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4
Ya mm: 34.8...38.8

Yb mm: 42.0...47.6

Remarks: : C.D.C. # 390 4727
:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
replaces : 02.02.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R225-19
Type number : 0 460 426 127
Customer Part-No. :

Customer-specific information
Customer : CUMMINS/GB

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Start of delivery block
Piston stroke mm: 1.5
mm: $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.70...4.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000s.: 73.00...74.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000s.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000s.: 8.00...14.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
Del. quantity cm³/
1000s.: 52.00...58.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...120.00
mind 1000s.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
TD travel mm: 4.90...5.70
mm: (4.60...6.00)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 750

TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 500
TD travel mm: 1.20...2.00
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.60...3.20

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 750

Supply-pump
pressure bar: 3.70...4.30

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1050

Supply-pump
pressure bar: 4.90...5.50

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1050
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1200
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1170
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...15.00
1000s.: (0.00...15.00)

5th speed 1/min: 1100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 52.00...58.00
1000s.: (49.00...61.00)

8th speed 1/min: 1130

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...45.00
1000s.: (15.00...45.00)

9th speed 1/min: 1050

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 68.50...71.50
1000s.: (67.00...73.00)

10th speed 1/min: 900

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 71.00...74.00
1000s.: (69.00...76.00)

12th speed 1/min: 750

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 73.00...74.00
1000s.: (70.50...76.50)

20th speed 1/min: 500

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 59.00...67.00
1000s.: (57.00...69.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1050
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 8.00...14.00
1000s.: (6.00...16.00)

Dispersion cm³/: 5.5
1000s.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 30.00...60.00
1000S.: (30.00...60.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.8...1.2
SVS max.	mm: 2.2
Ya	mm: 34.8...38.8
Yb	mm: 40.7...46.3

Remarks:

: C.D.C. # 391 0252
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
replaces : 02.02.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R225-20
Type number : 0 460 426 128
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BT -5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.5
mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.50...4.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000S.: 64.50...65.50
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 10.00...12.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
Del. quantity cm³/
1000S.: 46.00...52.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
TD travel mm: 5.00...5.80
mm: (4.70...6.10)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 750
TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1050
 Supply-pump pressure bar: 4.60...5.20
 Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)
 2nd speed 1/min: 1050
 Shutoff
 electromagnet Volt: 24
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1160
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...15.00
 1000S.: (0.00...15.00)
 4th speed 1/min: 1130
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 5th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 46.00...52.00
 1000S.: (43.00...55.00)
 9th speed 1/min: 1050
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 60.50...63.50
 1000S.: (59.00...65.00)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 62.00...65.00
 1000S.: (60.00...67.00)
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 64.50...65.50
 1000S.: (62.00...68.00)
 Shutoff
 electromagnet Volt: 24
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 62.50...70.50
 1000S.: -

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 1050
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 10.00...12.00
 1000S.: (6.00...16.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

2nd speed 1/min: 350
Shutoff

electromagnet Volt: 24
Del. quantity cm³/: 30.00...70.00
1000s.: (30.00...70.00)

4th speed 1/min: 100
Shutoff

electromagnet Volt: 24
Del. quantity cm³/: 70.00...120.00
1000s.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 1.2...1.6
Ya	mm: 34.8...38.8
Yb	mm: 39.9...45.5

Remarks:

: C.D.C. # 390 8208
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
replaces : 11.07.89
Calibrating oil : ISO-4113
Injection pump : VE6/12F1050R225-18
Type number : 0 460 426 129
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6BT- 5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.5
mm: +0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.70...4.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000S.: 75.00...76.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 10.00...12.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
Del. quantity cm3/
1000S.: 52.00...58.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...120.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
TD travel mm: 5.00...5.80
mm: (4.70...6.10)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750

TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 500
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2.60...3.20
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 750
Supply-pump pressure bar: 3.70...4.30
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1050
Supply-pump pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1050
Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1200
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1170
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...15.00
1000s.: (0.00...15.00)

5th speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 52.00...58.00
1000s.: (49.00...61.00)

8th speed 1/min: 1130

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 15.00...45.00
1000s.: (15.00...45.00)

9th speed 1/min: 1050
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 69.50...72.50
1000s.: (68.00...74.00)

10th speed 1/min: 900
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 72.50...75.50
1000s.: (70.50...77.50)

12th speed 1/min: 750
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 75.00...76.00
1000s.: (72.50...78.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 61.50...69.50
1000s.: (59.50...71.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1050
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet Volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 10.00...12.00
1000s.: (6.00...16.00)

Dispersion cm³/: 5.5
1000s.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00
1000S.: (30.00...60.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.8...1.2
Ya	mm: 34.8...38.8
Yb	mm: 40.7...46.3

Remarks:

: C.D.C. # 390 8201

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R225-22
Type number : 0 460 426 132
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6BTA-590 IND.

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.85
mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

H01

Speed 1/min: 900
Setting value mm: 2.40...2.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 3.80...4.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000S.: 92.00...93.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 15.00...21.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 1190
Del. quantity cm3/
1000S.: 17.00...23.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...130.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.00...3.80
mm: (2.70...4.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
TD travel mm: 2.40...2.80
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750

TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.20...2.80

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 900
Supply-pump
pressure bar: 3.80...4.40

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1100
Supply-pump
pressure bar: 4.60...5.20

Shutoff
electromagnet Volt: 12

4th speed 1/min: 750
Supply-pump
pressure bar: 3.20...3.80

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1230
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)

Shutoff
electromagnet Volt: 12

5th speed 1/min: 1190
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 17.00...23.00
1000S.: (15.00...25.00)

9th speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 75.00...78.00
1000S.: (73.50...79.50)

10th speed 1/min: 900
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 80.50...83.50
1000S.: (78.50...85.50)

Shutoff
electromagnet Volt: 12

12th speed 1/min: 750
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 92.00...93.00
1000S.: (89.50...95.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 91.00...101.00
1000S.: (90.00...102.00)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000S.: (13.00...23.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 85.00...105.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.1...5.5
Ya	mm: 34.8...38.8
Yb	mm: 41.3...46.7

Remarks:

: C.D.C. # 391 7010
Overflow restriction 0.55 mm - Part No.
..303

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 15.06.92
replaces : 06.11.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1350R291-2
Type number : 0 460 426 134
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 GF LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.35
(from BDC): ±0.02(0.04)

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

H04

Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.90...6.50
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 99.00...100.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 19.00...25.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 3.5
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1400
Del. quantity cm³/
1000S.: 67.00...73.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...130.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 24

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 24
Inj.-qty. cm³/
difference 1000S.: 44.00...52.00*
Shutoff
electromagnet Volt: 24
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000

TD-travel
difference mm: 0.90...1.10*
Shutoff
electromagnet Volt: 24
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1000
Supply pump
pressure
difference bar: 0.10...0.30#
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 4.00...4.80
mm: (3.70...5.10)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 800
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.90...4.50

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.90...6.50

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1350
Supply-pump
pressure bar: 7.50...8.10

Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 1350

Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1440
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 1490
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...20.00
1000S.: (0.00...20.00)

5th speed 1/min: 1400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 67.00...73.00
1000S.: (65.50...74.50)

9th speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 93.00...96.00
1000S.: (91.50...97.50)

11th speed 1/min: 800
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 96.00...100.00
1000S.: (94.50...101.50)

12th speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 99.00...100.00
1000S.: (97.00...102.00)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 93.00...97.00
1000S.: (91.50...98.50)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 19.00...25.00
1000S.: (17.00...27.00)

Dispersion cm³/: 3.5
1000S.: (4.0)

4th speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Inj.-qty. cm³/ : 20.00..22.00#
difference 1000S.: (20.00...22.00)
Shutoff

electromagnet Volt: 24
3rd speed 1/min: 1000
Inj.-qty. cm³/: 44.00..52.00*
difference 1000S.: (44.00...52.00)
Shutoff

electromagnet Volt: 24
5th speed 1/min: 1000
Inj.-qty. cm³/: 2.00...8.00'
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 24

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.90...1.10*
difference mm: (0.90...1.10)
Shutoff

electromagnet Volt: 24
3rd speed 1/min: 1000
TD-travel : 0.30...1.10'
difference mm: (0.30...1.10)
Shutoff
electromagnet Volt: 24

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1000
Supply pump-
pressure : 0.10...0.30#
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 24

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 105.00...135.00
1000S.: (105.00...135.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 90.00...110.00
1000S.: (90.00...110.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation	mm
K	-
KF	5.1...5.5
MS	0.8...1.2
SVS max.	4.2
XK	17.0...19.0
XL	11.9...15.3
Ya	37.4...40.4
Yb	41.9...47.3

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 10.06.92
replaces : 12.07.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1150R225-23
Type number : 0 460 426 143
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BT -5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Start of delivery block
Piston stroke mm: 1.3
mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.50...4.10
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 71.50...72.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1190
Del. quantity cm³/
1000S.: 50.00...56.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...120.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.50...6.30
mm: (5.20...6.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
TD travel mm: 1.50...2.30
mm: (1.20...2.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2.40...3.00

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Supply-pump pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump pressure bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)
2nd speed 1/min: 1150
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1220
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1190

H08

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...56.00
1000S.: (47.00...59.00)

9th speed 1/min: 1150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 66.50...69.50
1000S.: (65.00...71.00)

Shutoff
electromagnet Volt: 12
12th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 71.50...72.50
1000S.: (69.00...75.00)

Shutoff
electromagnet Volt: 12
20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 56.50...64.50
1000S.: -

Delivery-quant. and breakaway char.:

Inj.-qty.values,temp.-compensated
temperatura

Shutoff
electromagnet Volt: 12

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1150
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 0.8...1.2
XK	mm: 20.2...22.2
XL	mm: 11.5...14.9
Ya	mm: 35.8...37.8
Yb	mm: 41.7...47.1

Remarks:

: C.D.C. # 391 8282
: C.D.C. # 391 6949

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 04.06.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R381-8
Type number : 0 460 426 200
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6BT- 5.9 IND.

Power KW: 64
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.5
mm: +0.02(0.06)

Outlet : D

Injection-pump setting values

H10

Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.30...3.70
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.50...4.10
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1100
Del. quantity cm³/
1000S.: 49.50...50.50

Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 17.00...23.00

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
Del. quantity cm³/
1000S.: 33.50...39.50

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...90.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.90...6.70
mm: (5.60...7.00)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 750
 TD travel mm: 3.30...3.70
 mm: (2.80...4.20)

Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.50...4.10
 Shutoff electromagnet Volt: 24
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 5.10...5.70
 Shutoff electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1100
 Shutoff electromagnet Volt: 24
 Overflow quantity cm³/10s: 55.60...139.00
 (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1200
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1160
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 15.00...45.00
 1000S.: (15.00...45.00)
 5th speed 1/min: 1150
 Shutoff electromagnet Volt: 24

Del. quantity cm³/: 33.50...39.50
 1000S.: (30.50...42.50)
 12th speed 1/min: 1100
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 49.50...50.50
 1000S.: (47.00...53.00)
 15th speed 1/min: 750
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 47.50...50.50
 1000S.: (45.50...52.50)
 17th speed 1/min: 600
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 45.00...48.00
 1000H.: (43.00...50.00)
 20th speed 1/min: 500
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 32.50...40.50
 1000S.: (30.50...42.50)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1100
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff electromagnet Volt: 24

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff electromagnet Volt: -

Idle delivery:

1st speed 1/min: 375
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 17.00...23.00
 1000S.: (15.00...25.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 480
 Shutoff electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

2nd speed 1/min: 375

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.00...90.00
1000S.: (50.00...90.00)

Shutoff electromagnet:

Cur-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 1.0...1.4

Remarks:
: C.D.C # 392 2411
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 16.06.92
replaces : 19.07.88
Calibrating oil : ISO-4113

Injection pump : VE4/8F2300R308
Type number : 0 460 484 015
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M708 EA 17.0 TIPO

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 5.10...5.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Del. quantity cm³/
1000S.: 29.10...30.10
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm³/
1000S.: 22.00...28.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 37.00...63.00
mind 1000S.: 37.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 6.00...12.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
TD-travel
difference mm: 0.70...0.90
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2300
TD travel mm: 8.60...9.40
mm: (8.30...9.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
TD travel mm: 5.10...5.50
mm: (4.60...6.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.60...2.40
mm: (1.10...2.90)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 2000
TD travel mm: 7.20...8.00
mm: -

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
Supply-pump
pressure bar: 7.20...7.80

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5.30...5.90

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 600
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2900
Shutoff
electromagnet volt: 12

Del. quantity cm³/: 0.00...1.60
1000s.: (0.00...1.60)
3rd speed 1/min: 2700

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.50...11.50
1000s.: (2.50...12.50)
5th speed 1/min: 2500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...28.00
1000s.: (19.00...31.00)
9th speed 1/min: 2300

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.80...32.20
1000s.: (28.50...33.50)
12th speed 1/min: 1500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.10...30.10
1000s.: (27.30...31.90)
15th speed 1/min: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.50...31.90
1000s.: (28.40...33.00)
20th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.50...32.50
1000s.: (27.50...34.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000s.: (7.00...17.00)

Dispersion cm³/: 2.5
1000s.: (3.0)
2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 450
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...6.00
1000s.: (-2.50...8.50)

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1500
Inj.-qty. cm³/: 6.00...12.00
difference 1000S.: (5.00...13.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correctore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.70...0.90
difference mm: (0.70...0.90)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.00...53.00
1000S.: (43.00...53.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.00...42.00
1000S.: (32.00...42.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...63.00
1000S.: (37.00...63.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.6...2.0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 03.06.92
replaces : 03.10.86
Calibrating oil : ISO-4113

Injection pump : VE4/9F2075R126
Type number : 0 460 494 121
Customer Part-No. :

Customer-specific information

Customer : PSA

Engine : XD 3S

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 5.80...6.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 800
Setting value bar: 5.60...6.20

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 53.50...54.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 40.00...41.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 20.00...24.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 800
Del. quantity cm³/
1000S.: 26.50...32.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 67.00...113.00
mind 1000S.: 67.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 7.80...8.60
mm: (7.00...9.40)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
 Charge press hPa: 800
 TD travel mm: 5.80...6.20
 mm: (5.00...7.00)

Shutoff
 electromagnet Volt: 12

4th speed 1/min: 750
 Charge press hPa: 800
 TD travel mm: 0.80...1.60
 mm: (0.00...2.40)

Shutoff
 electromagnet Volt: 12

5th speed 1/min: 1000
 Charge press. hPa: 800
 TD travel mm: 2.50...3.30
 mm: -

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
 Charge press. hPa: 800
 Supply-pump pressure bar: 3.40...4.00
 bar: -

Shutoff
 electromagnet Volt: 12

2nd speed 1/min: 1500
 Charge press. hPa: 800
 Supply-pump pressure bar: 5.60...6.20
 bar: -

Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 2000
 Charge press. hPa: 800
 Supply-pump pressure bar: 7.10...7.70
 bar: -

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)

2nd speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
 Charge-air pressure-setting point hPa: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 47.50...48.50
 (43.00...53.00)

2nd speed 1/min: 2600
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 0.00...3.00
 (0.00...3.00)

5th speed 1/min: 2300
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 26.50...32.50
 (21.50...37.50)

8th speed 1/min: 2200
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 40.50...46.50
 (35.50...51.50)

9th speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 51.20...53.20
 (47.70...56.70)

12th speed 1/min: 1500
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 53.50...54.50
 (50.00...58.00)

18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 40.00...41.00
 (35.50...45.50)

20th speed 1/min: 1000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 50.50...53.50
 (49.00...55.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 2075
 Del. quantity cm³/1000s.: 0.00...3.00
 (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 350

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 20.00...24.00
1000S.: (14.00...30.00)

Dispersion cm³/: 2.0
1000S.: (3.0)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

3rd speed 1/min: 400

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 8.00...12.00
1000S.: (2.00...18.00)

Automatic starting fuel delivery:

1st speed 1/min: 230

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 60.00...100.00
1000S.: (60.00...100.00)

2nd speed 1/min: 330

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 67.00...113.00
1000S.: (67.00...113.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: K1
KF	mm: 5.4...5.7
MS	mm: 1.2...1.4
SVS max.	mm: 4.6
XK	mm: 20.2...22.2
XL	mm: 9.7...13.1
Ya	mm: 19.1...23.1
Yb	mm: 68.7...85.8

H18

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 03.06.92
replaces : 03.10.86
Calibrating oil : ISO-4113

Injection pump : VE4/9F2125R126-1
Type number : 0 460 494 123
Customer Part-No. :

Customer-specific information

Customer : PSA

Engine : XD 3S ALT.

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 5.80...6.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 800
Setting value bar: 5.60...6.20

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 53.50...54.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 40.00...41.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 17.00...21.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2350
Charge press hPa: 800
Del. quantity cm³/
1000S.: 26.50...32.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 67.00...113.00
mind 1000S.: 67.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 7.80...8.60
mm: (7.00...9.40)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
 Charge press hPa: 800
 TD travel mm: 5.80...6.20
 mm: (5.00...7.00)

Shutoff
 electromagnet Volt: 12

4th speed 1/min: 750
 Charge press hPa: 800
 TD travel mm: 0.80...1.60
 mm: (0.00...2.40)

Shutoff
 electromagnet Volt: 12

5th speed 1/min: 1000
 Charge press. hPa: 800
 TD travel mm: 2.50...3.30

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
 Charge press. hPa: 800
 Supply-pump pressure bar: 3.40...4.00

Shutoff
 electromagnet Volt: 12

2nd speed 1/min: 1500
 Charge press. hPa: 800
 Supply-pump pressure bar: 5.60...6.20

Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 2000
 Charge press. hPa: 800
 Supply-pump pressure bar: 7.10...7.70

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)

2nd speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750
 Charge-air pressure-setting point hPa: 300

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 47.50...48.50
 (43.00...53.00)

3rd speed 1/min: 2650
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 0.00...3.00
 (0.00...3.00)

5th speed 1/min: 2350
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 26.50...32.50
 (21.50...37.50)

8th speed 1/min: 2250
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 40.50...46.50
 (35.50...51.50)

9th speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 51.20...53.20
 (47.70...56.70)

10th speed 1/min: 1000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 50.50...53.50
 (49.00...55.00)

12th speed 1/min: 1500
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 53.50...54.50
 (50.00...58.00)

18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000S.: 40.00...41.00
 (35.50...45.50)

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 2125
 Del. quantity cm³/1000S.: 0.00...3.00
 (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm³/1000S.: 0.00...3.00
 (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...21.00
1000s.: (11.00...27.00)
Dispersion cm³/: 2.0
1000s.: (3.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.00...9.00
1000s.: (-1.00...15.00)
3rd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...100.00
1000s.: (60.00...100.00)

2nd speed 1/min: 330
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000s.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.00...113.00
1000s.: (67.00...113.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: K1
KF mm: 5.4...5.7
MS mm: 1.2...1.4
SVS max. mm: 4.6
XK mm: 20.2...22.2
XL mm: 9.4...12.8
Ya mm: 19.1...23.1
Yb mm: 66.5...83.1

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 03.06.92
replaces : 22.08.89
Calibrating oil : ISO-4113

Injection pump : VE4/9F2400R138
Type number : 0 460 494 131
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 086-1.6l (SG)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 2.90...3.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 4.60...5.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Del. quantity cm³/
1000S.: 31.70...32.70
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 475
Del. quantity cm³/
1000S.: 6.00...10.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2600
Del. quantity cm³/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400
TD travel mm: 6.10...6.90
mm: (5.80...7.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
TD travel mm: 2.90...3.30
mm: (2.40...3.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump pressure bar: 2.40...3.00
 Shutoff electromagnet Volt: 12
 2nd speed 1/min: 1500
 Supply-pump pressure bar: 4.60...5.20
 Shutoff electromagnet Volt: 12
 3rd speed 1/min: 2400
 Supply-pump pressure bar: 6.90...7.50
 Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff electromagnet Volt: 12
 Overflow quantity cm3/10s: 41.70...83.40 (27.80...97.30)
 2nd speed 1/min: 2400
 Shutoff electromagnet Volt: 12
 Overflow quantity cm3/10s: 55.50...138.90 (41.70...152.90)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2800
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 0.00...3.00 (0.00...3.00)
 5th speed 1/min: 2600
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 12.00...16.00 (10.00...18.00)
 8th speed 1/min: 2525
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 18.50...28.50 (17.50...29.50)
 9th speed 1/min: 2400
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 27.00...29.00 (25.80...30.20)
 Shutoff electromagnet Volt: 12
 12th speed 1/min: 1500
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 31.70...32.70 (30.00...34.40)

Shutoff electromagnet Volt: 12
 Shutoff electromagnet volt: 12
 20th speed 1/min: 600
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 21.50...24.50 (20.00...26.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 475
 Del. quantity cm3/ 1000S.: 0.00...3.00 (0.00...3.00)

Idle delivery:

1st speed 1/min: 475
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 6.00...10.00 (4.00...12.00)

Dispersion cm3/ 1000S.: 2.0 (3.0)

2nd speed 1/min: 650
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 0.00...7.60 (0.00...7.60)

4th speed 1/min: 1200
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 0.00...5.00 (0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 18.00...68.00 (18.00...68.00)

2nd speed 1/min: 500
 Shutoff electromagnet Volt: 12
 Del. quantity cm3/ 1000S.: 3.50...23.50 (3.50...23.50)

Shutoff electromagnet Volt: 12

Shutoff electromagnet:

Cut-in min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.1...3.5
KF	mm: 5.6...6.0
MS	mm: 1.2...1.6
SVS max.	mm: 2.3
FH	mm: 1.8...2.4
XK	mm: 17.0...19.0
XL	mm: 9.8...13.2
Ya	mm: 38.6...40.6
Yb	mm: 50.4...63.3

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 04.06.92
replaces : 16.12.86
Calibrating oil : ISO-4113
Injection pump : VE4/9F2300R141
Type number : 0 460 494 132
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : X8/43

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 4.30...4.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

H25

Full-load del. with charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 29.20...30.20
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 390
Del. quantity cm3/
1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 11.00...17.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 55.00...95.00
mind 1000S.: 55.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 9.00...17.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
TD-travel
difference mm: 0.60...0.80
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2300

TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500

TD travel mm: 4.30...4.70
mm: (3.80...5.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800

TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
Supply-pump
pressure bar: 7.40...8.00

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500

Supply-pump
pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 400

Supply-pump
pressure bar: 2.80...3.40

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)
2nd speed 1/min: 2250

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...10.50
1000S.: (1.50...11.50)

5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...17.00
1000S.: (9.00...19.00)

8th speed 1/min: 2400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.50...27.50
9th speed 1/min: 2250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.90...33.50
1000S.: (29.70...34.70)

10th speed 1/min: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 28.70...31.70
1000S.: (27.70...32.70)

12th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.20...30.20
1000S.: (27.20...32.20)

20th speed 1/min: 600
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 29.50...33.50
1000S.: (28.50...34.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 390
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...13.00
1000S.: (7.00...15.00)

Dispersion cm³/: 2.5
1000S.: (2.5)

2nd speed 1/min: 440
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.00...7.00
1000S.: (0.50...7.50)

4th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1500
Inj.-qty. cm³/: 9.00...17.00
difference 1000S.: (9.00...17.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.60...0.80
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...46.00
1000S.: (26.00...46.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.1...3.4
KF mm: 5.7...6.0
MS mm: 1.7...1.9
SVS max. mm: 2.8
XK mm: 20.2...22.2
XL mm: 10.3...13.7
Ya mm: 37.2...39.2
Yb mm: 42.9...51.5

Remarks:

⋮
Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 04.06.92
replaces : 09.02.88
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R149
Type number : 0 460 494 138
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 36T-1.6l (36)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 4.60...5.20

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/
1000S.: 43.50...44.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 23.50...24.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 475
Del. quantity cm³/
1000S.: 6.00...10.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm³/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
Charge press hPa: 750
TD travel mm: 6.10...6.90
mm: (5.80...7.20)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 3.80...4.20
mm: (3.30...4.70)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 750
TC travel mm: 1.80...2.60
mm: (1.50...2.90)
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump pressure bar: 2.50...3.10
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump pressure bar: 4.60...5.20
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump pressure bar: 6.50...7.10
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000
Charge-air pressure-setting point hPa: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 33.50...34.50
(31.00...37.00)
3rd speed 1/min: 2750
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
5th speed 1/min: 2525
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 10.00...14.00
(8.00...16.00)
8th speed 1/min: 2425
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 22.00...32.00
(21.00...33.00)
9th speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 38.00...40.00
(36.80...41.20)
10th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 43.50...44.50
(41.80...46.20)
18th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 23.50...24.50
(21.00...27.00)
20th speed 1/min: 600
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 32.50...35.50
(31.00...37.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 475
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Idle delivery:

1st speed 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 6.00...10.00
(4.00...12.00)
Dispersion cm³/1000s.: 2.0
(3.0)
2nd speed 1/min: 1200
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...6.00
1000s.: (0.00...6.00)

Automatic starting fuel delivery:

1st speed 1/min: 400

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 22.00...72.00
1000s.: (22.00...72.00)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 10.00...30.00
1000s.: (10.00...30.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.6...6.0
MS	mm: 1.1...1.5
SVS max.	mm: 3.8
XK	mm: 18.4...20.4
XL	mm: 8.6...12.0
Ya	mm: 38.6...40.6
Yb	mm: 50.4...63.3

Remarks:

:
:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 04.06.92
replaces : 22.08.89
Calibrating oil : ISC-4113
Injection pump : VE4/9F2200R153
Type number : 0 460 494 141
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : J8S - 709

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
inlet temp. °C: 130...133

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130...133

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 800
Setting value bar: 5.10...5.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm3/
1000s.: 47.20...48.20

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000s.: 37.00...38.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000s.: 7.00...11.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 800
Del. quantity cm3/
1000s.: 23.00...29.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000s.: 60.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 6.20...7.00
mm: (6.20...7.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1400
Charge press hPa: 800
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 800
TD travel mm: 1.90...2.70
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1800
Charge press. hPa: 800
TD travel mm: 5.70...6.50
mm: (5.40...6.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2.60...3.20

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400
Charge press. hPa: 800
Supply-pump pressure bar: 5.10...5.70

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
2nd speed 1/min: 2000

Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00

Delivery-quant. and breakaway char.:

1st speed 1/min: 700

Charge-air pressure-setting
point hPa: 200
LDA-stroke mm: 4.5

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 41.00...42.00
(38.50...44.50)

2nd speed 1/min: 2700
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

3rd speed 1/min: 2500
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 2.50...17.50
(2.50...17.50)

5th speed 1/min: 2400
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 23.00...29.00
(22.00...30.00)

9th speed 1/min: 2000
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 43.40...45.40
(42.10...46.70)

12th speed 1/min: 1400
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 47.00...48.00
(45.20...49.80)

18th speed 1/min: 600
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000S.: 37.00...38.00
(34.50...40.50)

20th speed 1/min: 1000
Charge press. hPa: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 44.90...47.90
(43.40...49.40)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Idle delivery:

1st speed 1/min: 425

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...11.00
1000S.: (5.00...13.00)

Dispersion cm³/: 2.5
1000S.: (3.0)

2nd speed 1/min: 660

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 520

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...7.00
1000S.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 180

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...100.00
1000S.: (40.00...100.00)

2nd speed 1/min: 300

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.4...1.6
SVS max. mm: 3.6
XK mm: 17.0...19.0
XL mm: 10.3...13.7
Ya mm: 38.8...42.8
Yb mm: 34.1...43.9

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 05.06.92
replaces : 04.02.87
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R170
Type number : 0 460 494 152
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 162T-1.6L Turbo

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/
1000S.: 42.50...43.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 25.00...26.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 415
Charge press hPa: 750
Del. quantity cm³/
1000S.: 6.00...10.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm³/
1000S.: 13.00...19.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Charge press hPa: 750
Del. quantity cm³/
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250

Charge press hPa: 750
 TD travel mm: 6.40...7.20
 mm: (6.00...7.60)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1500
 Charge press hPa: 750
 TD travel mm: 3.80...4.20
 mm: (3.20...4.80)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 900
 Charge press hPa: 750
 TD travel mm: 1.60...2.40
 mm: (1.20...2.80)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 750
 Supply-pump pressure bar: 2.70...3.30
 bar: (2.50...3.50)

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1500
 Charge press. hPa: 750
 Supply-pump pressure bar: 4.80...5.40
 bar: (4.60...5.60)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2250
 Charge press. hPa: 750
 Supply-pump pressure bar: 6.70...7.30
 bar: (6.50...7.50)

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (27.80...97.30)

2nd speed 1/min: 2250
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...138.90
 (41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900
 Charge-air pressure-setting point hPa: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 36.00...37.00
 (33.00...39.00)

3rd speed 1/min: 2650
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 0.00...6.00
 (0.00...6.00)

5th speed 1/min: 2525
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 13.00...19.00
 (12.00...20.00)

8th speed 1/min: 2450
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 22.00...32.00
 (21.00...33.00)

9th speed 1/min: 2250
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 35.00...37.00
 (33.80...38.20)

12th speed 1/min: 1500
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: -
 (40.80...45.20)

18th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 25.00...26.00
 (23.30...27.70)

20th speed 1/min: 600
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 35.50...38.50
 (34.00...40.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 415
 Del. quantity cm³/1000s.: 0.00...3.00
 (0.00...3.00)

Idle delivery:

1st speed 1/min: 415

Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 6.00...10.00
1000S.: (4.00...12.00)

2nd speed 1/min: 1000

Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 400

Charge press. hPa: 750

Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 29.50...79.50
1000S.: (29.50...79.50)

2nd speed 1/min: 500

Charge press. hPa: 750

Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 17.50...37.50
1000S.: (17.50...37.50)

4th speed 1/min: 100

Charge press. hPa: 750

Shutoff

electromagnet Volt: 12
Del. quantity cm3/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 1.1...1.5
SVS max.	mm: 3.0
XK	mm: 17.0...19.0
XL	mm: 8.4...11.8

Remarks:

:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 04.06.92
replaces : 22.08.89
Calibrating oil : ISC-4113

Injection pump : VE4/9F2200R153-1
Type number : 0 460 494 156
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : J8S - 701 CA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130...133

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 800
Setting value bar: 5.10...5.70

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm3/
1000S.: 47.00...48.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 37.00...38.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 7.00...11.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 800
Del. quantity cm3/
1000S.: 23.00...29.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 800
TD travel mm: 6.20...7.00
mm: (6.20...7.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1400
Charge press hPa: 800

TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 1.90...2.70
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1800
Charge press. hPa: 800
TD travel mm: 5.70...6.50
mm: (5.40...6.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2.60...3.20
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400
Charge press. hPa: 800
Supply-pump pressure bar: 5.10...5.70
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump pressure bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)
2nd speed 1/min: 2000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 200
LDA-stroke mm: 4.5
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 41.00...42.00
1000S.: (38.50...44.50)

2nd speed 1/min: 2700
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 2500
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...17.50
1000S.: (2.50...17.50)

5th speed 1/min: 2400
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.00...29.00
1000S.: (22.00...30.00)

9th speed 1/min: 2000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.40...45.40
1000S.: (42.10...46.70)

12th speed 1/min: 1400
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 47.00...48.00
1000S.: (45.20...49.80)

18th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...38.00
1000S.: (34.50...40.50)

20th speed 1/min: 1000
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.90...47.90
1000S.: (43.40...49.40)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...11.00
1000S.: (5.00...13.00)

Dispersion cm³/: 2.5
1000s.: (3.0)
2nd speed 1/min: 660
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
3rd speed 1/min: 520
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.00...7.00
1000s.: (1.00...9.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...100.00
1000s.: (40.00...100.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000s.: (20.00...40.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.4...1.6
SVS max. mm: 3.6
XK mm: 17.0...19.0
XL mm: 10.3...13.7
Ya mm: 38.8...42.8
Yb mm: 34.1...43.9

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 11.06.92
replaces : 18.12.86
Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R234
Type number : 0 460 494 187
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : X8/45 Regata TD

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 4.90...5.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.60...6.20

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 45.50...46.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 33.00...34.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 16.00...20.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.5
1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2400
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 15.00...21.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 57.00...83.00
mind 1000S.: 57.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 8.00...16.00 #

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)

1. Speed 1/min: 1500
 TD-travel difference mm: 1.30...1.50 #
 Shutoff electromagnet Volt: 12
 SP press.-dif.measurement pompa di mandata (FP)
 1. Speed 1/min: 1500
 Supply pump pressure difference bar: 0.10...0.30 #
 Shutoff electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 Charge press hPa: 1000
 TD travel mm: 7.40...8.20
 mm: (7.10...8.50)

Shutoff electromagnet Volt: 12
 3rd speed 1/min: 1500
 Charge press hPa: 1000
 TD travel mm: 4.90...5.30
 mm: (4.60...5.60)

Shutoff electromagnet Volt: 12
 4th speed 1/min: 800
 Charge press hPa: 1000
 TD travel mm: 1.00...1.80
 mm: (0.70...2.10)

Shutoff electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.00...7.60
 Shutoff

electromagnet Volt: 12
 2nd speed 1/min: 1500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.60...6.20
 Shutoff

electromagnet Volt: 12
 3rd speed 1/min: 800
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.50...4.10
 Shutoff

electromagnet Volt: 12
 4th speed 1/min: 400
 Charge press. hPa: 1000

Supply-pump pressure bar: 2.20...2.80
 Shutoff electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)
 2nd speed 1/min: 2100
 Charge press. hPa: 1000

Shutoff electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
 Charge-air pressure-setting point hPa: 500
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 42.50...43.50
 (40.50...45.50)

3rd speed 1/min: 2550
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 1.00...8.00
 -

5th speed 1/min: 2400
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 15.00...21.00
 (14.00...22.00)

8th speed 1/min: 2300
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 25.50...32.50
 -

9th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 44.50...47.50
 (43.80...48.20)

10th speed 1/min: 800
 Charge press. hPa: 1000
 Shutoff electromagnet Volt: 12
 Del. quantity cm³/1000S.: 47.50...50.50
 -

12th speed 1/min: 1500

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.50...46.50
1000S.: (44.00...48.00)
18th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...34.00
1000S.: (31.00...36.00)
20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.80...35.20
1000S.: -

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 16.00...20.00
1000S.: (14.00...22.00)
Dispersion cm³/: 2.5
1000S.: (2.5)
2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.50...10.50
1000S.: (3.00...12.00)
4th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/: 5.00...7.00 #
difference 1000S.: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Inj.-qty. cm³/: 8.00...16.00#
difference 1000S.: (8.00...16.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):

1st speed 1/min: 1500
TD-travel : 1.30...1.50 #
difference mm: (1.30...1.50)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Supply pump-
pressure : 0.10...0.30 #
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...81.00
1000S.: (55.00...81.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 57.00...83.00
1000S.: (57.00...83.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.4...1.65
XK mm: 17.0...19.0
XL mm: 10.6...14.0
Ya mm: 37.2...39.2
Yb mm: 45.2...53.8

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 02.06.92
replaces : 16.01.89
Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R22-7
Type number : 0 460 494 189
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8144-67-220

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1800
Setting value mm: 7.60...8.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1800
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 2000
Del. quantity cm³/
1000S.: 37.50...38.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: -

Low-idle speed regulation

Speed 1/min: 370
Del. quantity cm³/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: -

Full-load speed regulation

Speed 1/min: 2350
Del. quantity cm³/
1000S.: 18.00...26.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 55.00...95.00
mind 1000S.: 55.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 8.30...9.10
mm: (8.00...9.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1800
TD travel mm: 7.60...8.00
mm: (7.10...8.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 1.20...2.00
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 12

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 3.20...3.80
bar: -

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1800
Supply-pump pressure bar: 6.30...6.90
bar: -

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump pressure bar: 6.70...7.30
bar: -

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.00...83.00
(26.00...98.00)
2nd speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.00...138.00
(40.00...153.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...4.40
-

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 18.00...26.00
(16.00...28.00)

9th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 36.70...39.30
(35.70...40.30)

10th speed 1/min: 1100
Shutoff
electromagnet volt: 12

Del. quantity cm³/1000s.: 43.50...46.50

Shutoff
electromagnet Volt: 12
12th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 37.50...38.50
(35.70...40.30)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 34.80...38.80
(33.80...39.80)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 370
Del. quantity cm³/1000s.: 0.00...3.00
-

Idle delivery:

1st speed 1/min: 370
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 8.00...12.00
(6.00...14.00)

Dispersion cm³/1000s.: 3.0
(3.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...3.00
-

3rd speed 1/min: 420
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 4.50...8.50
-

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1800
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1800
3rd speed 1/min: 1800
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1800
5th speed 1/min: 1800

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1800

Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1800
3rd speed 1/min: 1800
4th speed 1/min: 1800

SP press.-dif.measurement:

pompa di mandata (FP):

1st speed 1/min: 1800

Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1800
3rd speed 1/min: 1800
4th speed 1/min: 1800

Automatic starting fuel delivery:

1st speed 1/min: 400

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 37.00...67.00
1000S.: (37.00...67.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 55.00...95.00
1000S.: (55.00...95.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.4...5.7
MS	mm: 1.7...1.9
XK	mm: 25...27
XL	mm: 11.8...15.8
Ya	mm: 37.9...39.9
Yb	mm: 43.3...49.7

Remarks:

:
Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 12.06.92
replaces : 17.07.87
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R254
Type number : 0 460 494 200
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 086-1.6l(SG)

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 500
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 500
Setting value bar: 4.90...5.50

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 500
Del. quantity cm³/
1000S.: 28.00...29.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 24.50...25.50

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm³/
1000S.: 2.50...3.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2475
Charge press hPa: 500
Del. quantity cm³/
1000S.: 12.00...16.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 4.00...6.00*

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250

Supply pump
pressure
difference bar: 0.10...0.30*
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
Charge press hPa: 500
TD travel mm: 6.50...7.30
mm: (6.20...7.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 500
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 500
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 500
Supply-pump
pressure bar: 3.00...3.60
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 500
Supply-pump
pressure bar: 4.90...5.50
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2250
Charge press. hPa: 500
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000
Charge-air pressure-setting
point hPa: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...27.00
1000S.: (23.50...29.50)

3rd speed 1/min: 2700
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2475
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000S.: (10.00...18.00)

8th speed 1/min: 2400
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 16.00...26.00
1000S.: (15.00...27.00)

9th speed 1/min: 2250
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...29.00
1000S.: (25.80...30.20)

10th speed 1/min: 1000
Charge press. hPa: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...29.00
1000S.: (26.30...30.70)

11th speed 1/min: 1000
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...29.00
1000S.: (26.30...30.70)

12th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24.50...25.50
1000S.: (22.00...28.00)

14th speed 1/min: 600
Charge press. hPa: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 22.00...25.00
1000S.: (20.50...26.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 11.00...13.00
1000S.: (8.00...16.00)

2nd speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.50...8.50
1000S.: (3.00...11.00)
Dispersion cm3/: 2.0
1000S.: (3.0)

High Idle:

1st speed 1/mi: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...9.00
1000S.: (4.00...12.00)

Residual:

1.Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.50...3.50
1000S.: (1.00...5.00)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.20...5.20
1000S.: (1.70...6.70)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250

Inj.-qty. cm3/ : 4.00...6.00*
difference 1000S.: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm3/: 6.00...10.00'
difference 1000S.: (4.00...12.00)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm3/: 2.00...8.00#
difference 1000S.: (2.00...8.00)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
TD-travel : 0.60...0.80'
difference mm: (0.60...0.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
TD-travel : 1.30...1.70#
difference mm: (1.00...2.00)

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.10...0.30*
difference bar: -

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
Supply pump-
pressure : 0.70...1.10#
difference bar: (0.50...1.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.7...6.0
MS	mm: 1.3...1.55
Ya	mm: 37.6...41.6
Yb	mm: 50.4...63.3

Remarks:

⋮

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 12.06.92
replaces : 10.11.88
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R270
Type number : 0 460 494 210
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : D86-1.6L(SG)M187

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.00...4.60
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 28.50...29.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm³/
1000S.: 2.50...3.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2475
Del. quantity cm³/
1000S.: 14.00...18.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 6.00...12.00*

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)

1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80*
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
TD travel mm: 6.50...7.30
mm: (6.20...7.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2.10...2.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Supply-pump pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(27.80...97.30)
2nd speed 1/min: 2250

Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(41.70...152.90)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...6.00
(0.00...6.00)

5th speed 1/min: 2475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 14.00...18.00
(12.00...20.00)

8th speed 1/min: 2400
Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000S.: 18.00...28.00
(17.00...29.00)
9th speed 1/min: 2250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 27.50...29.50
(26.30...30.70)
12th speed 1/min: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 28.50...29.50
(26.80...31.20)
20th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 22.00...25.00
(20.50...26.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 11.00...13.00
(8.00...16.00)

2nd speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 5.50...8.50
(3.00...11.00)
Dispersion cm³/1000S.: 2.0
(3.0)

High Idle:

1st speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 7.00...9.00
(4.00...12.00)

Residual:

1.Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 2.50...3.50
(1.00...5.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.20...5.20
1000S.: (1.70...6.70)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250
Inj.-qty. cm³/: 6.00...12.00*
difference 1000S.: (5.00...13.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm³/: 2.00...8.00#
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):

1st speed 1/min: 1250
TD-travel : 0.60...0.80*
difference mm: (0.60...0.80)
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.40...1.80#
difference mm: (1.10...2.10)
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1250
Supply pump
pressure : 1.10...1.50#
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.6...6.0
MS	mm: 1.2...1.6
Ya	mm: 37.6...41.6
Yb	mm: 50.4...63.3

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 15.06.92
replaces : 17.07.87
Calibrating oil : ISO-4113

Injection pump : VE4/9F2300R282
Type number : 0 460 494 214
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M705 LA 19.0 DUKATO

Power KW: 51

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 4.30...4.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5.60...6.20

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 31.00...32.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 390
Del. quantity cm3/
1000S.: 6.00...10.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 18.00...24.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 55.00...95.00
mind 1000S.: 55.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 9.00...17.00

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500

TD-travel
difference mm: 0.60...0.80

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2300
 TD travel mm: 7.10...7.90
 mm: (6.80...8.20)

Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 1500
 TD travel mm: 4.30...4.70
 mm: (3.80...5.20)

Shutoff
 electromagnet Volt: 12

4th speed 1/min: 800
 TD travel mm: 1.70...2.50
 mm: (1.40...2.80)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
 Supply-pump pressure bar: 7.40...8.00
 bar: (7.00...8.40)

Shutoff
 electromagnet Volt: 12

2nd speed 1/min: 1500
 Supply-pump pressure bar: 5.60...6.20
 bar: (5.20...6.60)

Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 400
 Supply-pump pressure bar: 2.80...3.40
 bar: (2.40...3.80)

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (41.70...83.40)

2nd speed 1/min: 2300
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

3rd speed 1/min: 2650

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 1.00...9.00
 1000S.: (0.00...10.00)

5th speed 1/min: 2450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 18.00...24.00
 1000S.: (16.00...26.00)

9th speed 1/min: 2300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 31.70...34.30
 1000S.: (30.50...35.50)

10th speed 1/min: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 31.00...34.00
 1000S.: (30.00...35.00)

12th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 31.00...32.00
 1000S.: (29.00...34.00)

20th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 31.50...35.50
 1000S.: (30.50...36.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 390
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.00...10.00
 1000S.: (4.00...12.00)

Dispersion cm³/: 2.5
 1000S.: (2.5)

2nd speed 1/min: 440
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 1.00...7.00
 1000S.: (0.50...7.50)

3rd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

3rd speed 1/min: 1500
Inj.-qty. cm3/: 9.00...17.00
difference 1000s.: (9.00...17.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.60...0.80
difference mm: (0.60...0.80)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.00...75.00
1000s.: (45.00...75.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 26.00...46.00
1000s.: (26.00...46.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 55.00...95.00
1000s.: (55.00...95.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.7...1.95
SVS max. mm: 2.5
Ya mm: 37.2...39.2
Yb mm: 42.9...51.6

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 15.06.92
replaces : 19.07.89
Calibrating oil : ISO-4113
Injection pump : VE4/9F2250R293
Type number : 0 460 494 221
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 086T-1.6L LLK

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 3.00...3.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 4.90...5.50

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000s.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000s.: 26.50...27.50

Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000s.: 2.00...3.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
1000s.: 13.00...17.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000s.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000s.: 7.00...9.00*

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
SP press.-dif.measurement

pompa di mandata (FP)
1. Speed 1/min: 1250
Supply pump
pressure
difference bar: 0.10...0.30*
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2250
Charge press hPa: 750
TD travel mm: 7.00...7.80
mm: (6.70...8.10)
electromagnet Volt: 12
2nd speed 1/min: 2000
Charge press hPa: 750
TD travel mm: 6.40...7.20
mm: (6.10...7.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 750
TD travel mm: 3.00...3.40
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 750
Supply-pump
pressure bar: 3.30...3.90
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 750
Supply-pump
pressure bar: 4.90...5.50
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 700
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 5..5
Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (33.00...34.00
(30.50...36.50)

2nd speed 1/min: 2650
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (0.00...6.00
(0.00...6.00)

5th speed 1/min: 2525
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (13.00...17.00
(11.00...19.00)

8th speed 1/min: 2425
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (26.50...36.50
(25.50...37.50)

9th speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (36.30...38.30
(35.10...39.50)

12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quynity cm³/:
1000S.: (42.00...43.00
(40.30...44.70)

18th speed 1/min: 700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (26.50...27.50
(24.00...30.00)

20th speed 1/min: 700
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.00...37.00
1000S.: (32.50...38.50)

21th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...30.00
1000S.: (22.50...32.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

Damper set qty.:

2nd speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...13.00
1000S.: (8.00...16.00)

LFG-setting:

solidale con carcassa:

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (4.50...15.50)
Dispersion cm³/: 2.5
1000S.: (3.0)

High Idle:

1st speed 1/mi: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (5.00...15.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...3.00
1000S.: (-0.50...5.50)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 2.50...4.50
1000S.: (0.00...7.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/: 7.00...9.00*
difference 1000S.: -

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm³/: 9.00...13.00'
difference 1000S.: (7.00...15.00)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Inj.-qty. cm³/: 2.00...8.00#
difference 1000S.: (2.00...8.00)

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
TD-travel : 0.60...0.80'
difference mm: (0.60...0.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
TD-travel : 1.00...1.40#
difference mm: (0.70...1.70)

SP press.-dif.measurement:

pompa di mandata (FP):

1st speed 1/min: 1250
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.20...0.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
Supply pump-
pressure : 0.60...1.00#
difference bar: (0.40...1.20)

Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...37.00
1000S.: (17.00...37.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: K1
MS	mm: 1.1...1.5
SVS max.	mm: 3.1
Ya	mm: 37.6...41.6
Yb	mm: 50.4...63.3

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
Edition : 04.06.92
replaces : 14.07.89
Calibrating oil : ISO-4113
Injection pump : VE4/9F2300R162-4
Type number : 0 460 494 224
Customer Part-No. :

Customer-specific information
Customer : PSA

Engine : XUD9 DEP

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130...133

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

K04

Full-load del. with charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 28.00...29.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 7.00...9.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2440
Del. quantity cm3/
1000S.: 20.00...26.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 44.00...84.00
mind 1000S.: 24.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: *4.00...12.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: *0.70...0.90
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250
Supply pump
pressure
difference bar: 0.00...0.20
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.60...8.40
mm: (7.30...8.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.50...2.30
mm: (1.20...2.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump pressure bar: 3.00...3.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump pressure bar: 6.30...6.90

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...7.00
(0.00...7.00)

3rd speed 1/min: 2540
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 10.00...16.00
(9.00...17.00)

5th speed 1/min: 2440
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 20.00...26.00
(19.00...27.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 29.20...31.20
(28.20...32.20)

10th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 30.10...32.10
(29.10...33.10)

11th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 28.20...30.80
(27.50...31.50)

12th speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 28.00...29.00
(26.50...30.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 28.50...31.50
(28.00...32.00)

Mech. shutoff:

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 7.00...9.00
(4.00...12.00)

Dispersion cm³/1000s.: 2.5
(3.0)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 2.50...3.50
(1.00...5.00)

LFG-setting:
solidale con carcassa:
Idle delivery:

2nd speed 1/min: 470

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : #3.00...5.00
difference 1000S.: (3.00...5.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm³/ : *4.00...12.00
difference 1000S.: (2.00...14.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : *0.70...0.90
difference mm: (0.70...0.90)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : #0.00...0.20
difference bar: (0.00...0.20)
Shutoff
electromagnet Volt: 12

Part-load del. at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 10.8

1st speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...10.00
1000S.: (5.50...10.50)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...80.00
1000S.: (20.00...)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 15.00...35.00
1000S.: (...45.00)

4th speed 1/min: 100
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 44.00...84.00
1000S.: (24.00...)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.7...6.0
MS mm: 1.3..1.55
XK mm: 17.0...19.0
XL mm: 14.2...17.6
Ya mm: 19.8...21.8
Yb mm: 79.4...91.6

Remarks:

:
:
For adjustment of switching point
(EGR valve), include 10.8 mm spacer
at third fuel-delivery stop.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 15.06.92
 replaces : 17.01.89
 Calibrating oil : ISO-4113

 Injection pump : VE4/9F2100R303
 Type number : 0 460 494 225
 Customer Part-No. :

Customer-specific information
 Customer : FIAT-AUTO

Engine : X8/45S RITMO,PRISMA

Power KW: 66

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value mm: 5.50...5.90

AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 1000
 Setting value bar: 5.30...5.90

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 52.00...53.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/
 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 40.00...41.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 4.00...6.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2300
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 30.00...36.00

Start:

Speed 1/min: 100
 Del. quantity cm³/
 mind 1000S.: 55.00...85.00

KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qt/.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm³/
difference 1000S.: 8.00...16.00#

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500

TD-travel
difference mm: 0.80...1.00#

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500

Supply pump
pressure
difference bar: 0.10...0.30*

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 8.20...9.00
mm: (7.90...9.30)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 5.50...5.90
mm: (5.20...6.20)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
Charge press hPa: 1000

TD travel mm: 1.50...2.30
mm: (1.20...2.60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

8th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 2.50...5.50
mm: (2.50...5.50)

Shutoff
electromagnet Volt: 12
9th speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 3.20...4.80
mm: (2.50...5.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.00...7.60

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.30...5.90

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.20...3.80

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.2
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.50...44.50
1000S.: (41.50...46.50)

2nd speed 1/min: 2450
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...20.00
1000S.: (11.00...21.00)

3rd speed 1/min: 2650
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...7.00
1000S.: -

5th speed 1/min: 2300
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...36.00
1000S.: (29.00...37.00)

9th speed 1/min: 2100
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.50...53.50
1000S.: (49.50...54.50)

10th speed 1/min: 800
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.50...58.50
1000S.: -

12th speed 1/min: 1500
Charge press. hPa: 1000

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...53.00
1000S.: (50.50...54.50)

18th speed 1/min: 600
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...41.00
1000S.: (38.00...43.00)

20th speed 1/min: 800
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...39.00
1000S.: (35.50...40.50)

Mech. shutoff:
Electr. shutoff:
1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Damper set qty.:
LFG-setting:
solidale con carcassa:
idle delivery:

1st speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...15.00
1000S.: (9.50...16.50)

Residual:
1. Rotacao 1/min: 700
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.00...6.00
1000S.: (3.00...7.00)

2nd speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.50...9.50
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/ : 5.00...7.00*
difference 1000S.: -

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Inj.-qty. cm³/ : 8.00...16.00#
difference 1000S.: (8.00...16.00)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.80...1.00#
difference mm: (0.80...1.00)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500

Supply pump-
pressure : 0.10...0.30*
difference bar: (0.20...0.20)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220

KSB/AFB
valve Volt: 12

Timing valve Volt: 12
Shutoff

electromagnet Volt: 12
Del. quantity cm³/ : 57.00...83.00
1000S.: (57.00...83.00)

2nd speed 1/min: 300

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 37.50...52.50
1000S.: (37.50...52.50)

4th speed 1/min: 100

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 55.00...85.00
1000S.: (55.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.1...3.5
KF mm: 5.6...6.0
MS mm: 1.0...1.4
LDA stroke mm: 6.2
XK mm: 18.8...20.8
XL mm: 10.0...13.4
Ya mm: 37.2...39.2
Yb mm: 37.5...43.5

* Correction at adjusting nut (46)

:
:
Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
 Edition : 16.06.92
 replaces : 26.07.88
 Calibrating oil : ISO-4113
 Injection pump : VE4/9F2350R309
 Type number : 0 460 494 228
 Customer Part-No. :

Customer-specific information
 Customer : RNUR

Engine : J8S - 736

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
 Setting value mm: 2.60...3.00
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125
 Setting value bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1125
 Del. quantity cm3/
 1000S.: 36.00...37.00

Shutoff
 electromagnet Volt: 12
 Dispersion cm3/: 2.5
 1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
 Del. quantity cm3/
 1000S.: 2.00...6.00

Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
 Del. quantity cm3/
 1000S.: 20.00...26.00

Start:

Speed 1/min: 100
 Del. quantity cm3/: 52.00...92.00
 mind 1000S.: 52.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1125
 Inj.-qty. cm3/
 difference 1000S.: 11.00...15.00#

Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)

1.Speed 1/min: 1125
 TD-travel
 difference mm: 0.50...0.70#

Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)

1.Speed 1/min: 1125
 Supply pump
 pressure
 difference bar: 0.10...0.30*

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD travel mm: 2.60...3.00
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Supply-pump pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump pressure bar: 6.50...7.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000s.: (0.00...5.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...10.50
1000s.: (1.50...11.50)

5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...26.00
1000s.: (19.00...27.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.30...37.30
1000s.: (34.00...38.60)

10th speed 1/min: 1750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...36.50
1000s.: (33.20...37.80)

12th speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...37.00
1000s.: (34.20...38.80)

20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.10...37.10
1000s.: (33.30...37.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...10.00
1000s.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 8.50...12.50
1000S.: (6.50...14.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...6.00
1000S.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³/ : 10.00...12.00*
difference 1000S.: (10.00...12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³/: 11.00...15.00#
difference 1000S.: (11.00...15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³/: 2.00...8.00'
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70#
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50'
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...92.00
1000S.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7
SVS max. mm: 3.0
XK mm: 17.0...19.0
XL mm: 8.7...12.1

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

On initial measurement, screw in residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 11.06.92
replaces : 14.07.88
Calibrating oil : ISO-4113
Injection pump : VE4/9F2200L243-5
Type number : 0 460 494 232
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3+ ; OMEGA M. EGR

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 4.30...4.70
AFB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 4.00...4.60
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Del. quantity cm3/
1000S.: 43.00...44.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 270
Del. quantity cm3/
1000S.: 10.00...14.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 21.00...27.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 52.00...78.00
mind 1000S.: 52.00

KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1200

Inj.-qty. cm3/
 difference 1000s.: 4.50...12.50
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1200
 TD-travel
 difference mm: 0.50...0.70
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2200
 TD travel mm: 2.10...9.90
 mm: (8.80...10.20)

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1200
 TD travel mm: 4.30...4.70
 mm: (3.80...5.20)

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 TD travel mm: 1.90...2.70
 mm: (1.60...3.00)

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 600
 TD travel mm: 0.60...1.40
 mm: -

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 8th speed 1/min: 1200
 TD travel mm: 3.80...6.20
 mm: (3.80...6.20)

Shutoff
 electromagnet Volt: 12
 9th speed 1/min: 300
 TD travel mm: 2.70...4.30
 mm: (2.50...4.50)

Shutoff
 electromagnet Volt: 12
 10th speed 1/min: 800

TD travel mm: 2.80...5.20
 mm: (2.80...5.20)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2200
 Supply-pump
 pressure bar: 6.50...7.10

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1200

Supply-pump
 pressure bar: 4.00...4.60
 KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 Supply-pump
 pressure bar: 3.00...3.60

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 600

Supply-pump
 pressure bar: 2.40...3.00
 KSB/AFB
 valve Volt: 12

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (41.70...83.40)

2nd speed 1/min: 2200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2700
 KSB/AFB
 valve Volt: 12
 Shutoff

electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 2600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 4.00...12.00
 1000S.: (3.00...13.00)
 5th speed 1/min: 2450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 21.00...27.00
 1000S.: (20.00...28.00)
 9th speed 1/min: 2200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 34.80...37.80
 1000S.: (34.00...38.60)
 12th speed 1/min: 1200
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.00...44.00
 1000S.: (41.20...45.80)
 20th speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33.50...36.50
 1000S.: (32.00...38.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 270
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 270
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000S.: (8.00...16.00)
 Dispersion cm³/: 3.0
 1000S.: (3.0)
 2nd speed 1/min: 320

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.00...9.00
 1000S.: (2.50...9.50)
 4th speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...2.60
 1000S.: (0.00...2.60)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

3rd speed 1/min: 1200
 Inj.-qty. cm³/: 4.50...12.50
 difference 1000S.: (4.50...12.50)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1200
 TD-travel : 0.50...0.70
 difference mm: (0.50...0.70)
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 130
 KSB/AFB
 valve Volt: 12
 Timing valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.00...78.00
 1000S.: (52.00...78.00)

2nd speed 1/min: 230
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...35.00
 1000S.: (25.00...35.00)

4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm3/: 52.00...78.00
1000S.: (52.00...78.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.6...6.0
MS	mm: 1.8...2.0
XK	mm: 17.0...19.0
XL	mm: 9.2...12.6
Ya	mm: 37.9...39.9
Yb	mm: 36.6...42.0

Overflow restriction 0.55 mm - Part No.
..303
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 16.06.92
replaces : 01.02.89
Calibrating oil : ISO-4113
Injection pump : VE4/9F2350R309-1
Type number : 0 460 494 247
Customer Part-No. :

Customer-specific information
Customer : RNUR

Engine : J8S - 740

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1125
Del. quantity cm3/
1000S.: 36.00...37.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.00...6.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 20.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 52.00...92.00
mind 1000S.: 52.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 11.00...15.00*
Shutoff

electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1125

TD-travel
difference mm: 0.50...0.70*
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1125

Supply pump
pressure
difference bar: 0.10...0.30#
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD travel mm: 2.60...3.00
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Supply-pump
pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.50...7.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...10.50
1000S.: (1.50...11.50)

5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...26.00
1000S.: (19.00...27.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.30...37.30
1000S.: (34.00...38.60)

10th speed 1/min: 1750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...36.50
1000S.: (33.20...37.80)

12th speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...37.00
1000S.: (34.20...38.80)

20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.10...37.10
1000S.: (33.30...37.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...10.00
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...12.50
1000S.: (6.50...14.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...6.00
1000S.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³/ : 10.00...12.00#
difference 1000S.: (10.00...12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³/: 11.00...15.00*
difference 1000S.: (11.00...15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³/: 2.00...8.00'
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70*
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50'
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30#
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

2nd speed 1/min: 310
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...92.00
1000S.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation:
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7
SVS max. mm: 3.0
Ya mm: 37.8...41.8
Yb mm: 45.1...54.9

Remarks:

:
Overflow restriction 0.55 mm - Part No. ..303

On initial measurement, screw in residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
 Edition : 16.06.92
 replaces : 11.05.89
 Calibrating oil : ISO-4113

Injection pump : VE4/9F2100R303-1
 Type number : 0 460 494 250

Customer-specific information
 Customer : FIAT-AUTO

Engine : M710 CT 19.0 PRISMA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 1000
 Setting value mm: 6.00...6.40
 AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 1000
 Setting value bar: 5.60...6.20

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 53.00...54.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 2.5
 1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm³/
 1000S.: 41.00...42.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
 Del. quantity cm³/
 1000S.: 11.00...15.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.5
 1000S.: (2.5)

Residual-Delivery Setting

Speed 1/min: 700
 Del. quantity cm³/
 1000S.: 4.00...6.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2300
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 32.00...38.00

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 50.00...80.00
mind 1000S.: 50.00

KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm³/
difference 1000S.: 5.00...7.00*
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1500
TD-travel
difference mm: 0.80...1.00#

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Supply pump
pressure
difference bar: 0.10...0.30*
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 8.60...9.40
mm: (8.30...9.70)

KSB/AFB
valve Volt: 12
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 6.00...6.40
mm: (5.70...6.70)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.90...2.70
mm: (1.60...3.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 3.50...6.50
mm: (3.50...6.50)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 3.90...5.50
mm: (3.20...6.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.20...7.80

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.60...4.20

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 90.30...131.90
quantity cm³/10s: (90.30...131.90)

2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 111.10...194.40
quantity cm³/10s: (111.10...194.40)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.2
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 53.50...54.50
1000S.: (51.50...56.50)

2nd speed 1/min: 2650
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...7.00
1000S.: -

3rd speed 1/min: 2450
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...20.00
1000S.: (11.00...21.00)

4th speed 1/min: 2300
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.00...38.00
1000S.: (31.00...39.00)

5th speed 1/min: 2100
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 49.50...52.50
1000S.: (48.50...53.50)

6th speed 1/min: 1500
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 53.00...54.00
1000S.: (51.50...55.50)
7th speed 1/min: 800
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...42.00
1000S.: (38.50...43.50)

8th speed 1/min: 800
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 56.00...59.00
1000S.: -

9th speed 1/min: 600
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 41.00...42.00
1000S.: (39.00...44.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

KSB/AFB
valve Volt: 12

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 450
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...15.00
1000S.: (9.50...16.50)
Dispersion cm³/: 2.5
1000S.: (2.5)

Residual:

1. Rotacao 1/min: 700
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.00...6.00
1000S.: (3.00...7.00)

2nd speed 1/min: 550
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.50...10.50
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/ : 8.00...16.00#
difference 1000S.: (8.00...16.00)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Inj.-qty. cm³/: 5.00...7.00*
difference 1000S.: -

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : 0.80...1.00#
difference mm: (0.80...1.00)
KSB/AFB
valva Volt: 12
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Supply pump-
pressure : 0.10...0.30*
difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 220
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...78.00
1000S.: (52.00...78.00)

2nd speed 1/min: 300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.50...45.50
1000S.: (35.50...45.50)

4th speed 1/min: 100
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...80.00
1000S.: (50.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 1.0...1.4
LDA stroke mm: 6.2
XK mm: 18.8...20.8
XL mm: 10.0...13.4
Ya mm: 37.2...39.2
Yb mm: 37.5...43.5

Overflow restriction 0.75 mm - Part No.
..343,..344

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 17.06.92
replaces : 01.02.89
Calibrating oil : ISO-4113
Injection pump : VE4/9F2350R309-2
Type number : 0 460 494 251
Customer Part-No. :

Customer-specific information
Customer : RMUR

Engine : J8S-736 u.740

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motornah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1125
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1125
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1125
Del. quantity cm3/
1000S.: 36.00...37.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 2.00...6.00
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 20.00...26.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 52.00...92.00
mind 1000S.: 52.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1125
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 11.00...15.00'
Shutoff

electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1125
TD-travel
difference mm: 0.50...0.70'

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1125
Supply pump
pressure
difference bar: 0.10...0.30*
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.10...7.90
mm: (6.80...8.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD travel mm: 2.60...3.00
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1125
Supply-pump
pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6.50...7.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
quantity cm³/10s: (41.70...83.40)

2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...10.50
1000S.: (1.50...11.50)

5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...26.00
1000S.: (19.00...27.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.30...37.30
1000S.: (34.00...38.60)

10th speed 1/min: 1750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...36.50
1000S.: (33.20...37.80)

12th speed 1/min: 1125
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...37.00
1000S.: (34.20...38.80)

20th speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.10...37.10
1000S.: (33.30...37.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...10.00
1000S.: (4.00...12.00)
Dispersion cm³/: 2.5
1000S.: (3.0)

High Idle:

1st speed 1/mi: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...12.50
1000S.: (6.50...14.50)

Residual:

1. Rotacao 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...6.00
1000S.: (2.00...6.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1125
Inj.-qty. cm³/ : 10.00..12.00*
difference 1000S.: (10.00...12.00)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
Inj.-qty. cm³/: 11.00..15.00'
difference 1000S.: (11.00...15.00)
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1125
Inj.-qty. cm³/: 2.00...8.00#
difference 1000S.: (2.00...8.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1125
TD-travel : 0.50...0.70'
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1125
TD-travel : 1.10...1.50#
difference mm: (1.00...1.60)
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1125
Supply pump-
pressure : 0.10...0.30*
difference bar: (0.10...0.30)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

2nd speed 1/min: 310

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 52.00...92.00
1000S.: (52.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7
SVS max. mm: 2.3
Ya mm: 37.8...41.8
Yb mm: 45.1...54.9

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

On initial measurement, screw in residual-quantity adjusting screw 1 mm.

Screw out residual-quantity adjusting screw 1 mm after setting pump.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 12.06.92
replaces : 19.07.89
Calibrating oil : ISO-4113
Injection pump : VE4/9F2300R256-2
Type number : 0 460 494 253
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M705 LA 19.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : motomah

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery

Indicator setting
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 1.90...2.30
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 28.00...29.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (2.5)

Low-idle speed regulation

Speed 1/min: 390
Del. quantity cm3/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.5
1000S.: (2.5)

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm3/
1000S.: 18.50...24.50

Start:

Speed 1/min: 100
Del. quantity cm3/: 55.00...81.00
mind 1000S.: 55.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: 8.00...14.00
Shutoff

electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000
TD-travel
difference mm: 0.50...0.70
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2300
TD travel mm: 7.80...8.60
mm: (7.50...8.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
TD travel mm: 1.90...2.30
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2000
TD travel mm: 6.60...7.40
mm: (6.20...7.80)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
TD travel mm: 4.20...5.00
mm: (3.90...5.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
Supply-pump pressure bar: 7.10...7.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Supply-pump pressure bar: 5.30...5.90

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 600
Supply-pump pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(41.70...83.40)

2nd speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(55.60...139.00)

Delivery-quant. and breakaway char.:

L01

2nd speed 1/min: 2900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...6.00
(0.00...6.00)

3rd speed 1/min: 2650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 4.50...11.50
(3.00...13.00)

5th speed 1/min: 2500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 18.50...24.50
(17.50...25.50)

9th speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 29.30...31.70
(28.20...32.80)

10th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 27.80...30.20
(26.70...31.30)

12th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 28.00...29.00
(26.20...30.80)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 28.90...31.90
(27.40...33.40)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Idle delivery:

1st speed 1/min: 390
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 10.00...14.00
(7.00...17.00)

Dispersion cm³/1000s.: 2.5
(2.5)

2nd speed 1/min: 440
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...6.00
(0.00...6.00)

4th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1000
Inj.-qty. cm³/: 8.00...14.00
difference 1000S.: (8.00...14.00)
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.50...0.70
difference mm: (0.50...0.70)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 48.00...74.00
1000S.: (48.00...74.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...45.00
1000S.: (35.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...81.00
1000S.: (55.00...81.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 5.6...6.0
KF mm: 3.2...3.4
MS mm: 1.6...2.0
Ya mm: 37.2...39.2
Yb mm: 47.6...56.0

Remarks:

L02

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU
 Edition : 03.06.92
 replaces : 03.10.86
 Calibrating oil : IS04113

Injection pump : VE4/9F2075R126
 Type number : 0 460 494 121

Customer-specific information
 Customer : PEUGEOT

Engine : XD 3S

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil
 return temp. °C
 with thermometer : 40...48
 Electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Charge press. hPa: 800
 Setting value mm: 5.80...6.20

Supply-pump pressure

Speed 1/min: 1500
 Charge press hPa: 800
 Setting value bar: 5.60...6.20

Full-load del. with charge press.:

Speed 1/min: 1500

L03

Charge press. hPa: 800
 Del. quantity cm3/
 1000S.: 53.50...54.50
 Dispersion cm3/
 1000S.: -

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm3/
 1000S.: 40.00...41.00

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm3/
 1000S.: 20.00...24.00
 Del. quantity cm3/
 1000S.: -

Full-load speed regulation

Speed 1/min: 2300
 Charge press hPa: 800
 Del. quantity cm3/
 1000S.: 26.50...32.50

Start:

Speed 1/min: 100
 Del. quantity cm3/
 mind 1000S.: -

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
 Charge press hPa: 800
 TD travel mm: 0.80...1.60
 mm: (0.00...2.40)

2nd speed 1/min: 1000
 Charge press hPa: 800
 TD travel mm: 2.50...3.30
 mm: (2.20...3.60)

3rd speed 1/min: 1500
 Charge press hPa: 800
 TD travel mm: 5.80...6.20
 mm: (5.00...7.00)

4th speed 1/min: 2000
 Charge press hPa: 800
 TD travel mm: 7.80...8.60
 mm: (7.00...9.40)

Supply-pump pressure characteristic:

1st speed 1/min: 750
 Charge press. hPa: 800

Supply-pump
pressure bar: 3.40...4.00
2nd speed 1/min: 1500
Charge press. hPa: 800
Supply-pump
pressure bar: 5.60...6.20
3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump
pressure bar: 7.10...7.70

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.60...83.30
quantity cm³/10s: (26.60...98.30)
2nd speed 1/min: 2075
Charge press. hPa: 800
Overflow : 55.50...138.80
quantity cm³/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 4.5
Del. quantity cm³/: 47.50...48.50
1000s.: (43.00...52.00)
2nd speed 1/min: 2600
Charge press. hPa: 800
Del. quantity cm³/: 0.00...3.00
1000s.: -
3rd speed 1/min: 2300
Charge press. hPa: 800
Del. quantity cm³/: 26.50...32.50
1000s.: (21.50...37.50)
4th speed 1/min: 2200
Charge press. hPa: 800
Del. quantity cm³/: 40.50...46.50
1000s.: (35.50...51.50)
5th speed 1/min: 2000
Charge press. hPa: 800
Del. quantity cm³/: 51.20...53.20
1000s.: (47.70...56.70)

Damper set qty.:

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 W39
 Edition : 08.10.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 929
 Injection pump
 Pump designation : PES5M55C32ORS177
 EP type number : 0 410 055 974
 Governor
 Governor design. : RSF340/2300M64-18
 Governor no. : 0 420 021 159

Cust. part no. : T3

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A-USA

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

L05

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

EASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.85)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,5..8,9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.5

Testing:

Speed rpm : 220
Minimum rack travel: 8.00
Speed rpm : 315
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.50
Speed rpm : 520...620
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4,2...4,4
 : (4,1...4,5)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1600
Rack travel in m: 13.00...13.20
3rd speed rpm : 2200
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.30...0.70

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.40...3.60
2nd pressure hPa : 750
Rack travel in m: 4.90...5.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 49.5...51.0
 1000 s: (48.5...52.0)
Spread cm3 : 2.50
 1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm3/ : 48.5...50.5
 1000 s: (47.5...51.5)
Spread cm3 : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 33.0...34.0
 1000 s: (32.0...35.0)
Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm3/ : 29.0...33.0
 1000 s: (28.0...34.0)
Spread cm3 : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 5.0...6.0
 1000 s: (4.0...8.5)
Spread cm3 : 1.00
 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 340
Rack travel in mm : (12.7...14.1)
Del.quantity cm3/ : -
 1000 s: (41.0...49.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52.0 1,8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 35,5°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

- Control lever at idle stop.
- With $n = 315$ 1/min, and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 17.3°...17.7° (17.2°...17.8°) angular displacement of cam following start of delivery of cylinder no. 1.

Pin projection = 16.60...16.70 mm

CORRECTION OF INJECTED-FUEL QUANTITY

- Set max. change plus/minus 0.75 mm control-rod travel at correction screw on ALDA pressure box.

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21.0...22.0 (20.0...23.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws

with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457...2.517 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 17.02.89
 Test oil : ISO-4113

Combination no. : 0 400 075 959

Injection pump
 Pump designation : PES5M55C320RS166
 EP type number : 0 410 055 980
 Governor
 Governor design. : RSF340/2300M64-1
 Governor no. : 0 420 021 050

Cust. part no. : T3

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

LOS

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 0.5...0.6

100 s : (0.4...0.8)

Spread cm³ : 0.1

100 s : (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.0

Testing:

Speed rpm : 220
Minimum rack trave: 8.00
Speed rpm : 315
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.50
Speed rpm : 525...625
Speed rpm : 1000
Maximum rack trave: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4.20...4.40
: (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 14.00...14.10
2nd speed rpm : 1600
Rack travel in m: 13.30...13.50
3rd speed rpm : 2200
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm3/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm3/ : 31.0...35.0
1000 s: (30.0...36.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 5.0...6.0
1000 s: (4.0...8.5)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 340
Rack travel in mm : (12.4...13.8)
Del.quantity cm3/ : -
1000 s: (41.0...49.0)
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52.0 / 1,8A

Pin projection = 16.60...16.70 mm

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^\circ \dots 19.7^\circ$
($19.2 \dots 19.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Testing and adjusting the control-rod-
travel sensor with evaluation circuit
KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2,531...2,590
(2,502...2,620) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel
sensor

At a speed of 1000 1/min, set fuel
delivery at 18,5...19,5 (17,5...20,5)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633 \dots 1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2,531...
2,590 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 17.02.89
 Test oil : ISO-4113
 Combination no. : 0 400 075 980
 Injection pump
 Pump designation : PES5M55C320RS158
 EP type number : 0 410 055 986
 Governor
 Governor design. : RSF340/2300M64
 Governor no. : 0 420 021 050

Cust. part no. : T3

Customer-spec. information
 Customer : MB-PKW

Engine : OM602A / ALDA

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.1...5.2

100 s : (5.0...5.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 5.5

Testing:

Speed rpm : 220
Minimum rack travel: 8.00
Speed rpm : 315
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.50
Speed rpm : 540...640
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 380
Rack travel in mm : 4.20...4.40
 : (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version:

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
 1000 s: (49.0...52.5)
Spread cm³ : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200

Del.quantity cm³/ : 48.5...50.5
 1000 s: (47.5...51.5)
Spread cm³ : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
 1000 s: (32.0...35.0)
Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
 1000 s: (28.0...34.0)
Spread cm³ : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 5.5...6.5
 1000 s: (4.5...9.0)
Spread cm³ : 1.00
 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 340
Rack travel in mm : (12.4...13.8)
Del.quantity cm³/ : -
 1000 s: (41.0...49.0)
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52.0 / 1.8A

Pin projection = 15.60...16.70 mm

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5° , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^\circ \dots 19.7^\circ$
($19.2^\circ \dots 19.8^\circ$) angular displacement of cam following start of delivery of cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633 \dots 1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 07.11.85
 Test oil : ISO-4113
 Combination no. : 0 400 076 980
 Injection pump
 Pump designation : PES6M55C320RS157
 EP type number : 0 410 056 993
 Governor
 Governor design. : RSF315/2300M64-10
 Governor no. : 0 420 021 085

Customer-spec. information
 Customer : MB-PKW

Engine : OM603A / ALDA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
 position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

**SET IDLE CONTROL LEVER
 POSITION**

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever
 position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.4

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 510...610
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 1000
Rack travel in mm : 1.7...1.8

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm3/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm3 : 2.50
1000 s: (3.00)

Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm3/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : (12.8...14.2)
Del.quantity cm3/ : -
1000 s: (42.0...49.9)
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52.0 / 1.8A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2°...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 22.0...23.0 (21.0...24.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

Pin projection = 16.60...16.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 08.07.92
Replaces : 17.02.89
Test oil : ISO-4113

Combination no. : 0 400 076 987

Injection pump
Pump designation : PES6M55C320RS157
EP type number : 0 410 056 993
Governor
Governor design. : RSF315/2300M64-2
Governor no. : 0 420 021 059

Customer-spec. information
Customer : MB-PKW

Engine : OM603A / ALDA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)
Rack travel in mm : 20.00...22.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.00 (1.00)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 13.90...14.00
Del. quantity cm³/ : 5.1...5.2
100 s : (5.0...5.3)
Spread cm³ : 0.2
100 s : (0.3)

2nd speed rpm : 290.0
Rack travel in mm : 5.3...5.5
Del. quantity cm³/ : 0.5...0.6
100 s : (0.5...0.9)
Spread cm³ : 0.1
100 s : (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h : 1850
Del. quantity : 51.0...52.0
1000 : (50.0...53.0)
Spread cm³ : 2.50
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 50...0
3rd rack travel in: 8.1...8.5
Speed rpm : 2500
4th rack travel in: 2950
Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000
Rack travel in mm : 1.7...1.8

LOW IDLE 1
Control lever
position degrees: 8...12
Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.4

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 510...610
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 4.20...4.40
 : (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 50.0...51.5
 1000 s: (49.0...52.5)
Spread cm3 : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm3/ : 48.5...50.5
 1000 s: (47.5...51.5)

Spread cm3 : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 33.0...34.0
 1000 s: (32.0...35.0)
Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm3/ : 29.0...33.0
 1000 s: (28.0...34.0)
Spread cm3 : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 5.5...6.5
 1000 s: (5.0...9.5)
Spread cm3 : 1.00
 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 315
Rack travel in mm : (12.8...14.2)
Del.quantity cm3/ : -
 1000 s: (42.0...49.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3,0
Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52.0

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^\circ \dots 19.7^\circ$
($19.2 \dots 19.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Testing and adjusting the control-rod- travel sensor with evaluation circuit KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.472...2.532
(2.442...2.562) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 23.0...24.0 (22.0...25.0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633 \dots 1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.472...
2.532 V must be attained.

Pin projection = 16.60...16.70 mm

DOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 17.02.89
 Test oil : ISO-4113

 Combination no. : 0 400 076 992

 Injection pump
 Pump designation : PES6M55C320RS157
 EP type number : 0 410 056 993
 Governor
 Governor design. : RSF315/2300M64
 Governor no. : 0 420 021 044

 Customer-spec. information
 Customer : MB-PKW

 Engine : OM603A / ALDA

 1st version kW : 110.0

TEST BENCH REQUIREMENTS

 Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 469 990 351

 Inlet press., bar : 1.00

 Test nozzle holder
 assembly : 0 681 343 009

 Opening
 pressure, bar : 172...175

 Test lines : 1 680 750 014

 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

 Prestroke mm : 2.20...2.30
 : (2.15...2.35)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.4

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.50
Speed rpm : 510...610
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 4.20...4.40
: (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.20...13.40
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.50...0.90

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.90...4.10
2nd pressure hPa : 750
Rack travel in m: 5.80...6.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm³/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm³/ : 48.5...50.5
1000 s: (47.5...51.5)

Spread cm³ : 2.50
1000 s: (3.00)

Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm³/ : 33.0...34.0
1000 s: (32.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm³/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : (12.8...14.2)
Del.quantity cm³/ : -
1000 s: (42.0...49.0)
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3,0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52.0

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5° , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device KDEP 1077 = $19.3^\circ \dots 19.7^\circ$ ($19.2^\circ \dots 19.8^\circ$) angular displacement of cam following start of delivery of cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.472...2.532 (2.442...2.562) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 23.0...24.0 (22.0...25.0) ccm/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633 \dots 1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.472...2.532 V must be attained.

Pin projection = 16.60...16.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 08.07.92
 Replaces : 14.11.89
 Test oil : ISO-4113
 Combination no. : 0 400 076 996
 Injection pump
 Pump designation : PES6M55C320RS155
 EP type number : 0 410 056 997
 Governor
 Governor design. : RSF315/2300M62
 Governor no. : 0 420 021 035

Customer-spec. information
 Customer : MB-PKW

Engine : OM603

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per valves. _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.00 (1.00)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 11.30...11.40
 Del. quantity cm³/ : 3.1...3.2
 100 s: (3.0...3.3)
 Spread cm³ : 0.2
 100 s: (0.3)

2nd speed rpm : 290.0
 Rack travel in mm : 5.4...5.6
 Del. quantity cm³/ : 0.5...0.6
 100 s: (0.5...0.9)
 Spread cm³ : 0.1
 100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 31.5...32.5
 1000 : (30.5...33.5)
 Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0
 3rd rack travel in: 7.8...8.2
 Speed rpm : 2500
 4th rack travel in: 2950
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000
 Rack travel in mm : 0.9...1.0

LOW IDLE 1

Control lever
 position degrees: 13...17
 Setting point w/out bumper spring
 Speed rpm : 290

Rack travel in mm : 5.5

Testing:

Speed rpm : 220
Minimum rack travel : 7.00
Speed rpm : 290
Rack travel in mm : 5.40...5.60
Rack travel in mm : 1.50
Speed rpm : 620...720
Speed rpm : 1000
Maximum rack travel : 1.00

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 4.20...4.40
 : (4.10...4.50)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in mm : 11.30...11.40
2nd speed rpm : 1800
Rack travel in mm : 10.90...11.10
3rd speed rpm : 2200
Rack travel in mm : 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1800
Del. quantity cm³/ : 34.0...35.5
 1000 s : (33.0...36.5)
Spread cm³ : 2.50
 1000 s : (3.00)
Speed rpm : 2200
Del. quantity cm³/ : 33.5...35.5
 1000 s : (32.5...36.5)
Spread cm³ : 2.50
 1000 s : (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 55.0...0.0
 1000 s : (55.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Speed rpm : 2500
Rack travel in mm : 7.80...8.20
Del. quantity cm³/ : 22.0...26.0
 1000 s : (21.0...27.0)
Spread cm³ : 2.50
 1000 s : (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.40...5.60
Del. quantity cm³/ : 5.5...6.5
 1000 s : (5.0...9.5)
Spread cm³ : 1.00
 1000 s : (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 315
Rack travel in mm : (12.6...14.0)
Del. quantity cm³/ : -
 1000 s : (32.0...40.0)
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3,0
Starting test
Speed rpm : 100
Del. quantity cm³/ : -
min. 1000 s : 55.0 / 1.8A

Remarks:

:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35,5°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 33.0°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

Start-of-delivery sensor system:
adjustment and blocking with device

KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Testing and adjusting the control-rod-
travel sensor with evaluation circuit
KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2,043...2,103
(2,013...2,132) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel
sensor

At a speed of 1000 1/min, set fuel
delivery at 18,0...19,0 (17,0...20,0)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633...1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.487...
2.547 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 c 6
 Edition : 10.07.92
 Replaces : 26.02.88
 Test oil : ISO-4113

Combination no. : 0 401 848 796

Injection pump
 Pump designation : PE8P110A320LS3842-1
 EP type number : 0 411 818 716
 Governor
 Governor design. : RQ300/1050PA187-18
 Governor no. : 0 421 801 430

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 481 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 8.4...8.8
 Del.quantity cm³/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Del.quantity : 126.0...128.0
 1000 : (123.5...130.5)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version

Setting point:
 Speed rpm : 650
 Rack travel in mm : 14.0

Testing:
 1st rack travel in: 11.70

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1350
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:

Speed rpm : 200
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050
Del.quantity cm3/ : 136.0...140.0
1000 s: (133.0...143.0)
Spread cm3 : 7.00
1000 s: (10.0)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a16
 Edition : 22.05.92
 Replaces : 02.91
 Test oil : ISO-4113
 Combination no. : 0 402 036 745
 Injection pump
 Pump designation : PES6P110A720/3LS3131
 -3
 EP type number : 0 412 016 734
 Governor
 Governor design. : RQ300/1100PA722-1
 Governor no. : 0 421 801 461

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 7.2...7.4
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm³ : 0.4
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 12.50...13.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del. quantity : 137.0...139.0
 1000 : (134.5...141.5)
 Spread cm³ : 4.00
 1000 : (8.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600
 Rack travel in mm : 13.0

Testing:
 1st rack travel in: 9.90

Speed rpm : 1140...1155
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 100
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 370...410

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 113.0...117.0
1000 s: (110.0...120.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 ~~636~~ 752
 Injection pump
 Pump designation : PES6P120A720/3LS3255
 -1
 EP type number : 0 412 026 756
 Governor
 Governor design. : RQV300...1000PA876
 -13
 Governor no. : 0 421 814 010

Customer-spec. information
 Customer : MAN

Engine : D2866LE102

1st version kw : 260.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

MO2

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 14.70...14.80
 Del. quantity cm³/ : 23.3...23.5
 100 s : (23.0...23.8)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del. quantity cm³/ : 1.7...2.3
 100 s : (1.4...2.6)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 9.90...10.10
 2nd speed rpm : 300
 travel mm : 1.50...1.70
 3rd speed rpm : 500
 travel mm : 3.30...3.90
 4th speed rpm : 800
 travel mm : 6.80...7.20
 5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1110
 Rack travel in mm : 12.40...15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:
1st rack travel in: 13.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 254...262

Testing:
Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 290...400

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 14.70...14.80
2nd speed rpm : 1300
Rack travel in m: 14.50...14.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 210
Rack travel in m: 11.80...11.90
3rd pressure hPa : 570

M03

Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7191

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 753
 Injection pump
 Pump designation : PES6P110A720/3LS3131
 -3
 EP type number : 0 412 016 734
 Governor
 Governor design. : RQV300...1100PA916
 Governor no. : 0 421 813 748

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

MO4

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del. quantity cm³/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.90

2nd speed rpm : 425

travel mm : 3.30...3.70

3rd speed rpm : 920

travel mm : 5.70...6.10

4th speed rpm : 1155

travel mm : 7.90...8.40

5th speed rpm : 1255

travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 9.10...11.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 137.0...139.0
1000 : (134.5...141.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 85...93

Testing:

Speed rpm : 200
Minimum rack travel: 9.20
Speed rpm : 300
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del. quantity cm³/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 d 5
 Edition : 22.05.92
 Replaces : 02.92
 Test oil : ISO-4113

Combination no. : 0 402 046 328

Injection pump
 Pump designation : PES6P120A32ORS419-2
 EP type number : 0 412 026 048
 Governor
 Governor design. : RQ275/950PA753-1
 Governor no. : 0 421 801 377

Customer-spec. information

Customer : RVI

Engine : MIDS/PS062045 FC

1st version kW : 144.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 8.70...8.80

Del.quantity cm³/ : 12.0...12.2
 100 s : (11.7...12.5)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 1.7...2.3
 100 s : (1.4...2.6)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 525
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 500
 Aneroid pressure h: 700
 Del.quantity : 120.0...122.0
 1000 : (117.0...125.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 525
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 7.20
 Speed rpm : 1015...1030
 2nd rack travel in: 4.00

Speed rpm : 1050...1080
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.30

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 8.70...8.80
2nd speed rpm : 950
Rack travel in m: 8.00...8.20
3rd speed rpm : 750
Rack travel in m: 8.30...8.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 8.70...8.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.20
2nd pressure hPa : 240
Rack travel in m: 8.45...8.55

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 950
Del.quantity cm³/ : 140.0...144.0
1000 s: (137.0...147.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 107.0...109.0
1000 s: (104.0...112.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.20
Speed rpm : 1015...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 k
 Edition : 22.05.92
 Replaces : 11.90
 Test oil : ISO-4113
 Combination no. : 0 402 046 340
 Injection pump
 Pump designation : PES6P120A32ORS525
 EP type number : 0 412 026 058
 Governor
 Governor design. : RQV300...1050PA955
 Governor no. : 0 421 813 856

Customer-spec. information

Customer : RVI
 Engine : M1DS062045J

1st version kw : 160.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 9.40...9.50
 Del.quantity cm3/ : 13.8...14.0
 100 s: (13.5...14.3)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.0...5.4
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 8.00...8.20
 2nd speed rpm : 275
 travel mm : 0.80...1.20
 3rd speed rpm : 430
 travel mm : 3.40...4.00
 4th speed rpm : 1400
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1240
 Rack travel in mm : 8.10...10.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Del.quantity : 138.0...140.0
 1000 : (135.0...143.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:

1st rack travel in: 8.40
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 244...252

Testing:

Speed rpm : 175
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 310...430

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 126.0...134.0
1000 s: (123.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

MD9

Speed rpm : 275
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 22.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 836
 Injection pump
 Pump designation : PES6P120A32ORS3303
 EP type number : 0 412 026 755
 Governor
 Governor design. : RQV275...1050PA1038K
 Governor no. : 0 421 815 313

Customer-spec. information
 Customer : RVI

Engine : MIDR 062045 J/3

1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.0...5.4

Del. quantity cm³/ : 1.9...2.3

100 s: (1.6...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1140

travel mm : 9.50...9.70

2nd speed rpm : 275

travel mm : 1.80...2.00

3rd speed rpm : 380

travel mm : 3.40...4.00

4th speed rpm : 740

travel mm : 6.40...6.80

5th speed rpm : 1480

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1270

Rack travel in mm : 8.60...11.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 268...276

Testing:

1st rack travel in: 9.90
Speed rpm : 1215...1225
2nd rack travel in: 6.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 221...229

Testing:

Speed rpm : 175
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 280...380

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 131.0...137.0
1000 s: (128.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIN
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113

Combination no. : 0 402 048 707

Injection pump
 Pump designation : PES8P120A320RS3300
 EP type number : 0 412 028 707
 Governor
 Governor design. : RQV350...1400PA1028
 Governor no. : 0 421 813 987

Customer-spec. information
 Customer : FINCANTIERI

Engine : 1308 V

1st version kw : 500.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 7- 8- 4- 5-
 6- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 15.30...15.40

Del. quantity cm³/ : 28.7...28.9
 100 s: (28.4...29.2)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 7.9...8.3
 Del. quantity cm³/ : 3.6...4.2
 100 s: (3.3...4.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1410
 travel mm : 8.30...8.50
 2nd speed rpm : 350
 travel mm : 1.30...1.70
 3rd speed rpm : 520
 travel mm : 3.20...3.80
 4th speed rpm : 910
 travel mm : 5.10...5.50
 5th speed rpm : 1750
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1490
 Rack travel in mm : 13.00...15.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1000

Del.quantity : 287.0...289.0
1000 : (284.0...292.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 14.30
Speed rpm : 1390...1400
2nd rack travel in: 4.00
Speed rpm : 1600...1630
4th rack travel in: 1750
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 250
Minimum rack travel: 9.60
Speed rpm : 350
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION
Speed rpm : 350...700

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 15.30...15.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...11.00
2nd pressure hPa : 500
Rack travel in m: 13.70...13.80
3rd pressure hPa : 400
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1350
Del.quantity cm³/ : 275.0...281.0
1000 s: (272.0...284.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 138.0...140.0
1000 s: (135.0...143.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.30
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 405.0...435.0
1000 s: (401.0...439.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.90...8.30
Del.quantity cm³/ : 36.0...42.0
1000 s: (33.0...45.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 26.06.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 066 700

Injection pump
Pump designation : PES6P110A720/3LS3131
-3
EP type number : 0 412 016 734
Governor
Governor design. : RSV350...1100POA487
-9
Governor no. : 0 421 833 316

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

M14

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
: (4.25...4.45)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 13.5...13.7
100 s: (13.2...13.9)

Spread cm³ : 0.4
100 s: (0.8)

2nd speed rpm : 350.0
Rack travel in mm : 6.8...7.0
Del. quantity cm³/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm³ : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080
Del. quantity : 135.0...137.0
1000 : (132.5...139.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Testing:

1st rack travel in: 10.00
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.40

Remarks:

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.9

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 111.0...115.0
1000 s: (108.0...118.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.80...7.00
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 4.50
1000 s: (7.00)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 066 701

Injection pump
 Pump designation : PES6P110A720/3LS3131
 -3
 EP type number : 0 412 016 734
 Governor
 Governor design. : RSV350...1100POA487
 -6
 Governor no. : 0 421 833 311

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

M16

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.70...11.80

Del.quantity cm³/ : 14.4...14.6
 100 s: (14.1...14.8)

Spread cm³ : 0.4
 100 s: (0.8)

2nd speed rpm : 350.0
 Rack travel in mm : 7.1...7.3
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm³ : 0.4
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1080
 Del.quantity : 144.0...146.0
 1000 : (141.5...148.5)

Spread cm³ : 4.00
 1000 : (8.00)

RATED SPEED

1st version
 Control lever
 position degrees: 93...101

Testing:

1st rack travel in: 10.70
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.40

Remarks:

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 123.0...127.0
1000 s: (120.0...130.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.10...7.30
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 4.50
1000 s: (7.00)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 21.05.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 402 076 746

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV625...1100P2A534-10
Governor no. : 0 421 833 373

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 AZ 030

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x3.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

M18

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 15.3...15.5

100 s : (15.1...15.7)

Spread cm³ : 0.4

100 s : (0.6)

2nd speed rpm : 625.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 2.7...3.1

100 s : (2.5...3.3)

Spread cm³ : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 153.0...155.0

1000 : (151.0...157.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.00
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 625
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 625
Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 700
Rack travel in m: 11.50...11.60
3rd pressure hPa : 915
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 187.0...191.0
1000 s: (185.0...193.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 119.5...123.5
1000 s: (117.5...125.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 27.0...31.0
1000 s: (25.0...33.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47398

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 748
 Injection pump
 Pump designation : PE6P110A72ORS3305
 EP type number : 0 412 016 740
 Governor
 Governor design. : RSV300...1100P1A555
 Governor no. : 0 421 833 379

Customer-spec. information
 Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

M20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 18.3...18.5

100 s : (18.0...18.7)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 1.0...1.6

100 s : (0.7...1.8)

Spread cm³ : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del.quantity : 183.0...185.0

1000 : (180.5...187.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...102

Testing:

1st rack travel in: 12.90

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1075...1105

3rd rack travel in: 4.00

Speed rpm : 1090...1120

4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.10
2nd speed rpm : 500
Rack travel in m: 13.90...14.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 550

1st pressure hPa : —
Rack travel in m: 12.20...12.40
2nd pressure hPa : 640
Rack travel in m: 13.40...13.60
3rd pressure hPa : 510
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: —
Speed rpm : 550
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

M21

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (131.0...159.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
Edition : 30.04.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 638 807

Injection pump
Pump designation : PE8P120A120LS7127
EP type number : 0 412 628 817
Governor
Governor design. : RQ300/1100PA134-2
Governor no. : 0 421 801 364

Customer-spec. information
Customer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 20.5...20.7
100 s : (20.2...21.0)

Spread cm³ : 0.5
100 s : (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.2...6.4
Del.quantity cm³/ : 1.4...2.0
100 s : (1.1...2.3)
Spread cm³ : 0.8
100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del.quantity : 205.0...207.0
1000 : (202.0...210.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 16.0

Testing:
1st rack travel in: 12.80
Speed rpm : 1150...1155
2nd rack travel in: 4.00

Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 790
Rack travel in m: 12.80...12.90
3rd pressure hPa : 490
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1150...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 230.0...260.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.20...6.40
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
Edition : 21.05.92
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 638 807

Injection pump
Pump designation : PE8P120A120LS7127
EP type number : 0 412 628 817
Governor
Governor design. : RQ300/1100PA134-3
Governor no. : 0 421 801 655

Customer-spec. information
Customer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

M24

Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del. quantity cm³/ : 20.5...20.7
100 s : (20.2...21.0)

Spread cm³ : 0.5
100 s : (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.2...6.4
Del. quantity cm³/ : 1.4...2.0
100 s : (1.1...2.3)
Spread cm³ : 0.8
100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del. quantity : 205.0...207.0
1000 : (202.0...210.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 16.0

Testing:
1st rack travel in: 12.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00

Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.30

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 790
Rack travel in m: 12.80...12.90
3rd pressure hPa : 490
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 230.0...260.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.20...6.40
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 22.05.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 638 808
 Injection pump
 Pump designation : PE8P120A12OLS7127
 EP type number : 0 412 628 817
 Governor
 Governor design. : RGV250...1100PA785-3
 Governor no. : 0 421 814 004

Customer-spec. information
 Customer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 13.80...13.90
 Del. quantity cm³/ : 20.5...20.7
 100 s: (20.2...21.0)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.3...6.5
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.40
 2nd speed rpm : 355
 travel mm : 1.70...2.20
 3rd speed rpm : 410
 travel mm : 2.20...2.70
 4th speed rpm : 1150
 travel mm : 8.30...8.70
 5th speed rpm : 1390
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1220
 Rack travel in mm : 11.50...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del. quantity : 205.0...207.0
 1000 : (202.0...210.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:
1st rack travel in: 12.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 150
Minimum rack travel: 8.30
Speed rpm : 250
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 360...420

CONSTANT REGULATION
Speed rpm : 350...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 790
Rack travel in m: 12.80...12.90
3rd pressure hPa : 490
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 142.0...144.0
1000 s: (139.0...147.0)

BREAKAWAY

M27

1st version
1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 230.0...260.0
1000 s: (226.0...264.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 b
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 640 812
 Injection pump
 Pump designation : PE12P120A52QLS7820
 EP type number : 0 412 620 814
 Governor
 Governor design. : RGV350...1150PA870-4
 Governor no. : 0 421 813 717

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 30.9...31.1

100 s: (30.6...31.4)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...6.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 600
 travel mm : 3.30...3.80

3rd speed rpm : 960
 travel mm : 5.30...5.80

4th speed rpm : 1206
 travel mm : 7.90...8.40

5th speed rpm : 1291
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 309.0...311.0
1000 : (306.0...314.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 13.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack travel: 7.00
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.80...8.10

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 9.40...9.50
2nd pressure hPa : 1100
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

N01

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm3/ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm3/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 128.0...130.0
1000 s: (125.0...133.0)
Spread cm3 : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c
 Edition : 26.06.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 640 817
 Injection pump
 Pump designation : PE12P120A520LS7826
 EP type number : 0 412 620 817
 Governor
 Governor design. : RQV350...115CPA870-4
 Governor no. : 0 421 813 717

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 : 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.10...15.20

Del. quantity cm³/ : 30.9...31.1

100 s: (30.6...31.4)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 600
 travel mm : 3.30...3.80

3rd speed rpm : 960
 travel mm : 5.30...5.80

4th speed rpm : 1206
 travel mm : 7.90...8.40

5th speed rpm : 1291
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 309.0...311.0
1000 : (306.0...314.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.80...9.90
2nd pressure hPa : 1100
Rack travel in m: 14.00...14.20

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

NO3

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm3/ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm3/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 128.0...130.0
1000 s: (125.0...133.0)
Spread cm3 : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c 3
 Edition : 26.06.92
 Replaces : 06.91
 Test oil : ISO-4113
 Combination no. : 0 402 640 829
 Injection pump
 Pump designation : PE12P120A520LS7826
 EP type number : 0 412 620 817
 Governor
 Governor design. : RGV350...900PA870-14
 Governor no. : 0 421 813 935

Customer-spec. information
 Customer : MBERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 500.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0
 Rack travel in mm : 5.3...5.9
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80
 2nd speed rpm : 655
 travel mm : 4.80...5.30
 3rd speed rpm : 960
 travel mm : 8.70...9.20
 4th speed rpm : 1120
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 950
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1600
Del.quantity : 236.0...238.0
1000 : (233.0...241.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 11.90
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.10...8.40

Measurement

Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 9.30...9.50
2nd pressure hPa : 700
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 750
Del.quantity cm3/ : 230.0...234.0
1000 s: (227.0...237.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm3 : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 640 838

Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RGV300...1150FA1039-1K
 Governor no. : 0 421 815 315

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

N06

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 Phasing : 130-225-240-285-300-
 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del. quantity cm³/ : 30.4...30.6

100 s : (30.1...30.9)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.0...9.2
 Del. quantity cm³/ : 14.9...15.1
 100 s : (14.6...15.4)

Spread cm³ : 0.8
 100 s : (1.2)

3rd speed rpm : 300
 Rack travel in mm : 7.3...7.5
 Del. quantity cm³/ : 5.2...6.0 *
 100 s : (-)

Spread cm³ : -
 100 s : (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 2.00...2.20

2nd speed rpm : 450
 travel mm : 4.00...4.40

3rd speed rpm : 800
 travel mm : 6.70...7.10

4th speed rpm : 1200
 travel mm : 10.30...10.50

5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1280
Rack travel in mm : 11.50...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 200
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 270...390

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1300
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 200
Rack travel in m: 9.30...9.40
3rd pressure hPa : 800
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version
Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version
Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version
Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del.quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.50
Del. quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7226

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

Start-of-delivery blocking 12° after
start of delivery of cylinder no. 1.

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 839
 Injection pump
 Pump designation : PE12P120A520LS7829-1
 EP type number : 0 412 620 827
 Governor
 Governor design. : RGV300...1150PA1039K
 Governor no. : 0 421 815 314

Customer-spec. information
 Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7
 Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 14.70...14.80
 Del. quantity cm³/ : 33.4...33.6
 100 s : (33.1...33.9)
 Spread cm³ : 0.5
 100 s : (0.9)
 2nd speed rpm : 500
 Rack travel in mm : 9.0...9.2
 Del. quantity cm³/ : 14.9...15.1
 100 s : (14.6...15.4)
 Spread cm³ : 0.8
 100 s : (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 7.30...7.50
 Del. quantity cm³/ : 5.2...5.6 *
 100 s : (-)
 Spread cm³ : -
 100 s : (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 300
 travel mm : 2.00...2.20
 2nd speed rpm : 450
 travel mm : 4.00...4.40
 3rd speed rpm : 800
 travel mm : 6.70...7,10
 4th speed rpm : 1200
 travel mm : 10.30...10.50
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1

Speed rpm : 1270
Rack travel in mm : 12.40...15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h : 1300
Del. quantity : 334.0...336.0
1000 : (331.0...339.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 13.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:

Speed rpm : 200
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONST/WT REGULATION

Speed rpm : 270...390

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1300
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 200
Rack travel in m: 9.30...9.40
3rd pressure hPa : 800
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del. quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del. quantity cm³/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del. quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del. quantity cm³/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7227

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

Start-of-delivery blocking 12° after
start of delivery of cylinder no. 1.

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 798
 Injection pump
 Pump designation : PE6P120A320LS7854
 EP type number : 0 412 626 872
 Governor
 Governor design. : RQV350...95CPA870-17
 Governor no. : 0 421 814 005

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm³/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.7

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.80

2nd speed rpm : 570
 travel mm : 3.90...4.40

3rd speed rpm : 850
 travel mm : 5.70...6.20

4th speed rpm : 1008
 travel mm : 7.40...7.90

5th speed rpm : 1110
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1200
Del.quantity : 237.0...239.0
1000 : (234.0...242.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 250
Minimum rack travel: 7.70
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 430...480

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 350
Rack travel in m: 10.40...11.50
3rd pressure hPa : 600
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

N13

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 231.0...234.0
1000 s: (228.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:
:

APPLICATION

Pistenbully

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 799
 Injection pump
 Pump designation : PE6P120A320LS7852
 EP type number : 0 412 626 871
 Governor
 Governor design. : RQ300/950PA1031-5
 Governor no. : 0 421 801 657

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.90...14.10
 Del. quantity cm³/ : 23.7...23.9
 100 s: (23.4...24.2)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.6...6.2
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000
 Del. quantity : 237.0...239.0
 1000 : (234.0...242.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 275
Rack travel in m: 11.20...11.40
3rd pressure hPa : 580
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del. quantity cm3/ : 231.0...234.0
1000 s: (228.0...237.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1005

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 03.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 910
 Injection pump
 Pump designation : PE6P120A320RS7138
 EP type number : 0 412 626 822
 Governor
 Governor design. : RQV200...11COPA712-5
 Governor no. : 0 421 813 951

Customer-spec. information
 Customer : SCANIA

Engine : DS9 08

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...5.55)
 Rack travel in mm : 9.00...12.00

N16

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.00...13.10
 Del. quantity cm³/ : 18.0...18.2
 100 s : (17.7...18.5)
 Spread cm³ : 0.6
 100 s : (0.9)
 2nd speed rpm : 225.0
 Rack travel in mm : 4.9...5.1
 Del. quantity cm³/ : 1.2...1.6
 100 s : (-)
 Spread cm³ : 0.5
 100 s : (0.9)

**(B) Setting of injection pump
 with governor**

GUIDE SLEEVE TRAVEL
 1st speed rpm : 225
 travel mm : 0.90...1.30
 2nd speed rpm : 350
 travel mm : 2.50...3.10
 3rd speed rpm : 650
 travel mm : 5.40...6.00
 4th speed rpm : 1145
 travel mm : 8.90...9.10
 5th speed rpm : 1280
 travel mm : 10.10...10.50

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del. quantity : 180.0...182.0
 1000 : (177.0...185.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 12.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 300...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 480
Rack travel in m: 12.30...12.40
3rd pressure hPa : 220
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 163.0...171.0
1000 s: (161.0...173.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 114.0...118.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...140.0
1000 s: (-)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 915
 Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA972
 Governor no. : 0 421 801 542

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1.00
Speed rpm : 2.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 600
1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 50.0...70.0 *
1000 s: (46.0...74.0)
Rack travel in mm : 10.30...10.60

Remarks:

* Set warm-start quantity at
excess-fuel stop for starting
on governor housing

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 916
 Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RGV300...1050PA797
 -17
 Governor no. : 0 421 813 884
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA
 1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 12.40...12.60
 Del.quantity cm³/ : 18.2...18.4
 100 s: (17.9...18.7)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 637
 travel mm : 4.90...5.40
 3rd speed rpm : 830
 travel mm : 6.00...6.50
 4th speed rpm : 1107
 travel mm : 8.30...8.80
 5th speed rpm : 1218
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del. quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 300...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.90...11.10
2nd pressure hPa : 400
Rack travel in m: 11.80...12.00
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del. quantity cm³/ : 201.0...204.0
1000 s: (198.0...207.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del. quantity cm³/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 917
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/950PA971
 Governor no. : 0 421 801 543

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm³/ : 24.0...24.2
 100 s: (23.7...24.5)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.3...6.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 1200
 Del.quantity : 240.0...242.0
 1000 : (237.0...245.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 750
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1st rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0 *
1000 s: (36.0...74.0)

Remarks:

* Set warm-start quantity at
excess-fuel stop for starting
on governor housing

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 917X

Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/950PA971
 Governor no. : 0 421 801 543

Cust. part no. : 0180740402

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.20...15.40

Del.quantity cm³/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 250
Rack travel in m: 10.60...10.70
3rd pressure hPa : 750
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950

Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 40.0...70.0 *
1000 s: (36.0...74.0)

* Set warm-start quantity at
excess-fuel stop for starting
on governor housing

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 26.06.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 922
 Injection pump
 Pump designation : PE6P120A320LS7834-10
 EP type number : 0 412 626 853
 Governor
 Governor design. : RQ300/1050PA972-2
 Governor no. : 0 421 801 556

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.70...13.90
 Del. quantity cm³/ : 20.9...21.1
 100 s: (20.6...21.4)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 800
 Del. quantity : 209.0...211.0
 1000 : (206.0...214.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : -
2nd speed rpm : 1050
Rack travel in m: 14.00...14.20
3rd speed rpm : 800
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600
1st pressure hPa : 250
Rack travel in m: 10.30...10.50
2nd pressure hPa : 550
Rack travel in m: 12.90...13.10
3rd pressure hPa : 1100
Rack travel in m: 13.80...14.00 *
4th pressure hPa : 1250
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 219.0...223.0
1000 s: (216.0...226.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1105

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm